THE

ADVISORY DEPARTMENT

IMPERIAL COLLEGE OF TROPICAL AGRICULTURE.

IMPERIAL MYCOLOGICAL
15 JULY 1935
INSTITUTE

REPORT

ON THE

Agricultural Department

ANTIGUA

1934.

ISSUED BY THE COMMISSIONER OF AGRICULTURE

FOR THE WEST INDIES.

1935.

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REPORT ON THE AGRICULTURAL DEPARTMENT, ANTIGUA, FOR THE YEAR 1934.

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LETTER OF TRANSMITTAL.

GAJ/JF.

C.A.302/35. 23rd February, 1935.

Sir,

I have the honour to transmit herewith the Annual Report of the Agricultural Superintendent on the working of the Agricultural Department of Antigua for the year ended December 31st, 1934.

2. The sugar crop for 1934 amounted to 20,677 tons as compared with 25,875 in 1933 and 19,251 in 1932. The rainfall was 17 inches below that of 1933 when the Island's record crop was made. The 1934 rainfall was badly distributed and the crop of 1935 may not exceed 18,000 tons.

3. The value of sugar exported is given as £182,096 or £9 3s. per ton, a very low figure, nevertheless, the planters were paid 14/– per ton for their canes plus a share in the profits of the factory.

4. The report gives a useful and interesting summary of the results obtained from sugar cane experiments conducted over a long series of years starting as far back as 1891. These experiments were conducted under the supervision of such eminent experimentalists as Barber, Watts, Tempany and Collens. The Department is now engaged in conducting a most elaborate series of experiments in co-operation with the Sugar Cane Investigation Committee of Antigua and under the direction of Mr. P. E. Turner, Adviser in Sugar Cane Experiments to the Commissioner of Agriculture, and future reports should contain the results of these new experiments.

5. The Sea Island cotton crop for 1934 was a small one, but with the improvement in the statistical position of stocks on hand and a slight advance in prices brought about mainly as a result of controlled production, the West Indian Sea Island Cotton Association has recommended a considerable increase in production for 1935, and Antigua's quota is now 30,000 lb. It is anticipated that the Cotton Growers' Association of Antigua will advise cotton growers to increase their planting accordingly. The Department maintains a supply of certified seed grown from pedigree material supplied by the Montserrat Agricultural Department.

6. Results of trials are recorded with varieties of Sweet Potatoes, Yams and Tannias. Planting material of the better varieties is available for distribution to peasants and others.

7. The persistent efforts of the Department in endeavouring to increase the quality of locally grown fruit is recorded in the report. Buded citrus, grafted mangoes and budded avocado pears continue to be distributed from the Government Nursery. It seems probable that the Bombay mangoe will prove superior to the Julie under Antigua conditions.

8. Satisfactory progress is to be recorded with the Land Settlement Schemes. Three estates have been purchased and divided into small holdings. The carrying out of this scheme has been made possible as a result of financial assistance received from the Colonial Development Fund. The rapidity with which the policy of placing as many peasants on the land as possible may be carried out by the funds available. I consider it highly desirable that additional sums be placed at the disposal of Government to enable this work to be expedited.

9. Agricultural education continues to engage the attention of the officers of the Department. The Superintendent is Secretary to the Agricultural Society which meets regularly and to the local Cotton Association and is a member of

the Sugar Cane Investigation Committee and the Land Board. Lectures are given to estate overseers and elementary school teachers are given a course of training.

10. I regret that it has not been found possible for lack of funds to improve the condition of the Live Stock of the Island. Peasant owned animals in particular are of extremely poor quality and there is much scope for improvement.

11. The Agricultural Department has been fully staffed during the year and I wish to record my appreciation of the manner in which the staff has carried out its duties.

I have the honour to be,

Sir,

Your obedient servant,

G. A. JONES,

Commissioner of Agriculture.

The Honourable,

The Colonial Secretary,

ANTIGUA, B.W.I.

Report on the Agricultural Department, Antigua

For the Period January to December, 1934.

STAFF OF THE AGRICULTURAL DEPARTMENT, 1934.

Agricultural Superintendent ..	F. H. S. Warneford, M.A., B.Sc., A.I.C., F.C.S. ..
Agricultural Assistant	L. L. de Verteuil, D.I.C.T.A.
Junior Assistant	V. G. Pereira
Assistant Clerk (Office)	G. L. Bellot
Assistant Clerk (Field)	S. H. Abbott
Cotton Inspector	R. L. V. Hall.
Foreman (Experiment Station) ..	R. E. M. Whyte.

The Agricultural Superintendent was on sick leave from June 28th to June 30th. Mr. Pereira was on sick leave from April 24th to May 5th and on Study Leave at the Imperial College of Tropical Agriculture from September 26th to December 21st. Mr. Bellot was on leave from January 5th to January 12th. The Foreman was on sick leave from January 22nd to January 25th.

Mr. Hall continued to act as whole time Cotton Inspector.

DETAILS OF ADMINISTRATION.

EXPENDITURE.

Head VII.	Salaries	£1,366	12	6			
	House Allowances ..	75	18	1			
	Transport Allowances ..	222	0	0			
	Greencastle and Other Experimental Work	324	17	10			
	Sugar Cane Experiments ..	99	19	7			
	Planting and Maintaining Trees	29	19	10			
	Fumigation of Plants ..	2	5	0			
	Printing Reports and Contingencies	23	11	3			
	Destruction of Wild Cotton and Okra Plants	2	7	2			
	Distribution of Cotton Seed ..		nil				
	Distribution of Paris Green ..		nil				
	Refresher Course at Imperial College of Tropical Agriculture to Junior Agricultural Assistant ..	33	6	8			
	Co-operative Fruit and Vegetable Industry, to cover loss on sale of crates ..	41	17	11	£2,222	15	10

Land Settlement Expenditure.

	Greencastle.			Matthews.			Jonas's.					
Planting Material ..	0	15	11		—		7	6	0			
Supervision ..	12	0	0	12	0	0	6	0	0			
Roads and Drains ..	16	9	1	3	16	11	3	4	6			
Sundry Other Charges	1	0	5		3	8			10			
	30	5	5	16	0	7	16	11	4	62	17	4

Advances for Land Settlement Purposes.

Purchase of Fertilizers ..	103	15	6			
Land Settlement Cultivation ..	100	17	2	204	12	8

Deposits for Land Settlement Purposes.

Sale of Crops.						
Sale of Canes, Greencastle ..	1,386	3	11			
„ „ „ Matthews ..	594	5	1½			
„ „ „ Jonas's ..	95	19	0	2,076	8	0½

Advances other than Land Settlement.

Purchase of Vegetable Seed				10	1	1

Deposits other than Land Settlement.

Purchase of Onion Seed ..				14	12	0
Total ..				£4,591	6	11½

RECEIPTS.

Revenue.	Head 4, Agricultural Receipts.							
	Sale of Formalin	1	18	3				
	Sale of Soil ..		2	0	2	0	3	
	Head 8, Sale of Pamphlets ..						6	2 0 9
Advances.								
	Land Settlement Cultivation				61	10	8	
	Purchase of Fertilizer ..				44	6	0	
	Purchase of Vegetable Seed..				16	5	11	
	Purchase of Text Books ..					9	8	
	Care of Canes Jonas's ..				5	17	6	
	Co-operative Fruit ond Vegetable Industry ..				58	12	1	187 1 10
Deposits.	Sale of Crops.							
	Sale of Produce, Experiment Station				175	8	7½	
	Sale of Canes, Greencastle ..				1,444	15	4½	
	Sale of Canes, Matthews ..				644	4	2	
	Sale of Canes, Jonas's ..				206	7	8	
					2,470	15	10	
	Less sums transferred to Advances for Land Settlement Cultivation and Purchase of Fertilizer				105	16	8	
					2,364	19	2	
	Purchase of Onion Seed ..				15	1	11	2,380 1 1
					Total		..	£2,569 3 8

The true Revenue of the Agricultural Department for the year was as follows:—

Revenue from Experiment Station *	£175	8	7½		
Profit on Sale of Vegetable Seeds	3	0	1		
Sale of Formalin	1	18	3		
Sale of Soil		2	0	£180	8 11½
Total ..				£180	8 11½

PLANT IMPORTATIONS

During the year the following plants and seeds were imported:—

PLANTS OR CUTTINGS.

Sago Palms	2 plants from Montserrat.

BUDWOOD.

Valencia Orange	200 buds from Dominica.
Washington Navel Orange ..	100 „ „ „
Tangerine	100 „ „ „
Marsh's Seedless Grapefruit ..	100 „ „ „
Peter Mango	100 „ „ Trinidad.
Bombay Mango	100 „ „ „
Graham Mango	50 „ „ „
Peach Mango	50 „ „ „
Pollock Avocado Pear	50 „ „ „
Rudder Avocado Pear	50 „ „ „
River Avocado Pear	30 „ „ „
St. Clair Avocado Pear	30 „ „ „

SEEDS.

Cotton Seed	50 lb. from Montserrat.
Bengal Beans	10 lb. „ „
Crotolaria vasculosa	2¾lb. „ Trinidad.
Pigeon Pea (Trinidad selected) ..	1¼lb. „ „
Red Cedar (Cedrela odorata) ..	2 pkts. from Dominica.
Onion Seed	35lb. from Teneriffe.
Cauliflower (Early Patna) ..	3oz. from India through the Commissioner of Agriculture.
Vegetable Seed	22lb. 2oz. from W. Atlee Burpee & Co., U.S.A.

* Paid into Deposit to be repaid to Land Settlement as Land Settlement Funds were used in establishing the Station.

PLANT AND SEED DISTRIBUTION

The following plants and seeds were distributed during the period under review:—

*Cane Cuttings	74,811
Onion Seedlings	42,650
Tomato Seedlings	5,874
Egg Plant Seedlings	180
Budded Oranges	145
Budded Limes	5
Grape Fruit	34
Tangerines	20
Papaw	44
Budded Mangoes	51
Budded Avocado Pears	13
Pine Apple Suckers	72
Sapodilla	13
Bread Fruit	4
Guavas	35
Whitewood	12
Mahogany	18
Casuarina	321
Flamboyant	93
Gliricidia	55
Eucalyptus	19
Cassia	21
Bougainvillea	178
Miscellaneous Trees	39
Miscellaneous Ornamentals	128
Onion Seed	35 lb.
Cauliflower Seed	2½ oz.
Other Vegetable Seed	18 lb. 2 oz.

* B.2935	33,999	(con.)	59,238
B.726	21,569	M.42	813
B.891	1,000	G.119	1,500
M.7	2,130	Co.281	140
M.3	540	Misc.	13,120
	59,238	Total	74,811

WORK AT GREENCASTLE EXPERIMENT STATION.

NURSERY WORK.

(A) *Sugar Cane.*—The following varieties were grown as plant canes:—B.H.10.12, B.374, B.726, B.891, B.2935, G.119, G.153, P.O.J.2714, P.O.J.2878, F.C.916, F.C.988, M.3, M.7 and M.42, together with specimen plots of B.417, B.3922, B.4596, P.O.J.213, P.O.J.234, P.O.J.2725, P.O.J.-2727, Co.213, Co.221 and Co.281.

B.3922, B.4596, B.11569, B.374, B.381, B.417, B.726, B.891, B.2935, S.C. 12.4, G.119, G.153, P.O.J.36, P.O.J.213, P.O.J.2714, P.O.J.2725, P.O.J.2727, P.O.J.2878, Co.281, F.C.916 and F.C.988 were cultivated as first ratoons.

B.2935 appears to be a variety of promise both as a plant cane and as a ratoon. Cuttings of this variety have now been distributed to most estates in Antigua.

F.C.916 which appeared to be very promising when grown as a plant cane during the season 1932-34 has not done very well as a ratoon.

The M. canes have made better growth than in the preceding season but have again suffered very badly from borer damage.

The three M. canes, F.C.916 and F.C.988 are being compared with B.H.-10.12 in a preliminary yield experiment which was planted in the Experiment Station in November 1934.

(B) *Fruit and Vegetables.*

Citrus Fruit. The following citrus fruit plants were produced during the year 1934:—

Washington Navel Orange	151
Valencia Orange	186
Archbishop Orange	24
Marsh's Seedless Grape Fruit	84
Tangerine	68
Budded Limes	12
Total Citrus	525

A new citrus nursery of approximately 260 sour orange stocks and 100 rough lemon stocks was established during 1934 for working in 1935.

Mangoes.—As stated in the report for 1933 it has been found that while budded and grafted mangoes worked in pots have failed to make satisfactory aftergrowth under Antigua conditions, plants budded *in situ* or stocks budded in nursery beds where ample root growth is possible have given good results. In the latter case if lifting is carefully carried out and the plant removed with a good ball of soil transplanting causes little shock and good aftergrowth results.

During 1934 the following choice mangoes were propagated:—

Julie	250	(228 in Nursery Beds and 22 in situ.)
Ceylon	20	
Bombay	25	
Peter	4	
Gordon	5	
Unknown	50	(20 in Nursery Beds and 30 in situ.)

Top-working of Mangoes.—Trees top worked with the variety Julie have continued to make only slow growth but better results have been obtained with Ceylon and other varieties. During 1934, 5 trees on Government land were top worked with the variety Peter, 3 with the variety Gordon and 3 with the variety Bombay. At the time of writing these have all made good growth.

Avocado Pears.—Thirty-two pears of the variety St. Ann were produced during 1934 and budwood of four good varieties was brought from Trinidad in December for budding on young stocks.

Bread Fruit.—One hundred and fifty bread fruit plants were raised from root cuttings: these will be available for distribution during 1935.

Onions and Tomatoes.—Several thousand onion and tomato slips were grown during the year. Most of the latter were supplied free of cost to allottees on the Greencastle Land Settlement.

FRUIT PLOTS.

Citrus.—The plots established in 1931 and in 1932 and the plot of oranges planted at the end of 1933 made good growth. Several of the trees in the 1931 plots bore fruit for the first time.

The plot of seven Marsh's Seedless Grape Fruit planted in 1933 has not done well. This plot is rather exposed but it is hoped that considerable improvement will result as the recently established wind break grows.

Two of the lime trees grafted on rough lemon stocks were lost as a result of flood damage during December. Oranges budded on sour orange stocks remained uninjured even though in some cases they were on lower lying land than the limes and were thus more exposed to the full force of the stream.

The good progress made by the orange trees indicates that this fruit can be grown in the Bendals district—at any rate in the vicinity of the stream—provided that a site is selected which is protected from the wind and provided also that the plots are mulched with trash or other organic matter during the dry season and that the trees are sprayed with 3% Sulphemulsol solution whenever scale insects are prevalent. In the dry season a thorough spraying every three or four weeks is required.

Disappointment has been experienced by persons who have obtained citrus from the Department's nurseries and have attempted to grow the trees in wind swept situations. It must be realised that the climate of Antigua is not ideally suited to the cultivaton of citrus and that the three measures outlined above are essential for healthy growth even when the plants are cultivated in the wetter districts.

EXPERIMENTAL WORK.

(A) *Sugar Cane.*—For convenience the results of the distance of planting experiment conducted at the experiment station are included in the section on general sugar cane experiments.

(B) *Sweet Potatoes.*—The varietal trial planted in July 1933 was reaped during the season under review. Six varieties were included and the lay out consisted of four randomised blocks each plot being 1/64 acres in area. At time of reaping it was discovered that the plots of New Jersey were not pure cultures so that the yields from the plots of this variety have been disregarded.

The following table shows the mean yields of the five other varieties expressed as tons per acre:—

Variety.	Yield.
V.52	10.3 tons
Red Nut	7.8 „
Moore	7.3 „
White Gilkes	6.5 „
Bert	6.3 „

Differences will not exceed .875 tons per acre by chance more often than once in one hundred times. V.52 is therefore significantly better than the other varieties. Red Nut is significantly better than White Gilkes and Bert, and Moore is better than Bert.

The above five varieties together with Brooks Seedling were again planted in a variety trial in June 1934. It is hoped from these two experiments to ascertain which of these varieties is the best suited for growing during the summer months. Experiments will then be conducted with potatoes planted during November and December.

Yams. A varietal trial was planted in June, 1933 and reaped in January 1934. Each plot consisted of 10 holes and the lay out was 6 randomised blocks.

The following table shows the mean yields expressed in tons per acre:—

Variety.	Yield.
Seal Top	8.8 tons per acre.
Bugle Horn	7.1 „ „ „
Cush Cush	6.8 „ „ „
Light Red	6.2 „ „ „
Lisbon	6.2 „ „ „
Crop	5.1 „ „ „

Differences will not exceed 2.34 tons per acre by chance more often than once in one hundred times. Seal top is therefore significantly better than Light Red, Lisbon and Crop.

Eddoes.—A varietal trial was planted in June, 1933 and reaped in March 1934. The plot size and lay out was similar to that described above in the case of the yam varietal experiment.

The following table shows the mean yields expressed in tons per acre:—

Variety.	Yield.
Tannia Yellow	2.83 tons per acre.
Tannia White	2.80 „ „ „
Tannia Eddoe	2.89 „ „ „
Tannia Roliza White	2.51 „ „ „
Tannia Priete	2.40 „ „ „
Tannia Roliza	1.55 „ „ „

Differences will not exceed 0.86 tons per acre by chance more often than once in one hundred times. Tannia Yellow, Tannia White, Tannia Eddoe and Tannia Roliza White are better than Tannia Roliza.

MODEL ALLOTMENT.

As was stated in the report for 1933 it has been found more convenient for the report on the Model Allotment to refer to the period October 1st to September 30th rather than to the calendar year, although it is impossible to select any period which covers one complete crop on all the plots. The statement of annual expenditure and revenue for the various plot units is shown in Table A and the statement of the revenue and expenditure in connection with the individual crops is shown in Table B.

The 1933-34 season has not been a good one owing chiefly to a glut of tomatoes, yams and sweet potatoes on the local market at the time of reaping these crops. In the main however the conclusions reached in 1932 and 1933 have been confirmed.

A small profit has been made on sugar cane (plant canes together with first ratoons). This profit could be considerably increased by the cultivation of tomatoes as a catch crop provided there was a sufficiently large market.

Profits have been made on sweet potatoes, eddoes, carrots and beet, and losses on onions, turnips, cassava, yams, peas, and beans.

Considerable improvement was again observed in the fruit plot: the guavas, bread fruit and avocado pears have made good progress and so have most of the mangoes—the backward plants of the latter are being replaced by more vigorous plants of the same variety. In lieu of the fodder grasses which were originally planted between the trees on this plot and whose removal became necessary as a result of the injury caused by their roots, sweet potatoes and yams have been planted as cover crops to reduce weeding expenses and produce some small revenue during the seasons before the fruit trees come into bearing.

In future seasons the stock plot will be either discontinued or considerably reduced in size. The idea of including this plot in the rotation was that each allottee who kept cattle would tether his stock on a portion of his allotment at night and that this practice would afford an economical method of manuring a part of his land each year. The number of stock available for tethering in this way on the stock plot in the Model Allotment has however been too small to utilise the area available and the production of manure has been too small to compensate for the high cost of weeding when the time comes for the recultivation of the land.

The expenditure during the period under review amounted to £49. 3. 3½ and the revenue to £46. 12. 7. there being a loss of £2. 10. 8½. If the expenditure and revenue of the fruit plot are omitted there is a profit of £2. 9. 3½ on the remainder of the allotment.

The total expenditure since the laying down of the plots amounted to £174.2.3½ and the total revenue to £154.11.4. The adverse balance is thus £19.10.11½ which is due chiefly to the heavy expenditure of £16.14.2. on the fruit plot, the revenue from which has amounted to only 2/- to date.

TABLE OF PLOT EXPENDITURE AND REVENUE.

PLOT 1.

First Ratoons 1931
Stock Plot 1932
Sweet Potatoes .. 1933
Cassava 1934
Potatoes reaped in April 1934.
Land Cultivated and Cassava planted June 1934.

EXPENDITURE.

1933—1934	£	s.	d.
Weeding Pots ..	0	1	1
Reaping Pots ..	0	0	9
Forking	0	3	10
Lining	0	0	9
Banking	0	4	6
Trenching	0	0	10
Weeding	0	6	1
Planting and Supplying ..	0	3	4
Insect Control ..	0	4	7
	1	5	9
Previous Exp. ..	1	18	2
Total Expenditure	3	3	11

REVENUE.

1933—1934	£	s.	d.
Potatoes	1	14	3
Previous Revenue	0	15	0
Total Revenue ..	2	9	3
Profit 1934 ..	0	8	6
Deficit 1934 ..		—	
Total Profit ..		—	
Total Deficit ..	0	14	8

PLOT 2.

First Ratoons 1931
Stock Plot 1932
Sweet Potatoes .. 1933
Eddoes 1934
Potatoes reaped in April 1934.
Land cultivated and Eddoes planted June 1934.

EXPENDITURE.

1933—1934	£	s.	d.
Weeding Pots ..	0	1	1
Reaping Pots ..	0	0	3
Forking	0	3	11
Lining	0	0	9
Banking	0	4	6
Trenching ..	0	0	11
Weeding	0	6	2
Planting and Supplying ..	0	1	8
Planting material	0	5	0
	1	4	3
Previous Exp. ..	1	18	2
Total Expenditure	3	2	5

REVENUE.

1933—1934	£	s.	d.
Potatoes	1	14	3
Previous Revenue	0	15	0
Total Revenue ..	2	9	3
Profit 1934 ..	0	10	0
Deficit 1934 ..		—	
Total Profit ..		—	
Total Deficit ..	0	13	2

PLOT 3.

First Ratoons 1931
Vegetables 1932
Peas, Beans & Vegs. .. 1933
Yams 1934
Land manured with 5½ h'gds. pen manure.
Yams planted June 1934.

EXPENDITURE.

1933—1934	£	s.	d.
Vegetables and Beans	3	4	6½
Forking	0	4	5
Lining	0	0	7
Banking	0	4	6
Weeding	0	4	7
Planting and Supplying ..	0	1	9
Planting Material	0	5	0
Manure	0	19	8
Manuring ..	0	2	4
	5	7	4½
Previous Exp. ..	6	0	10
Total Expenditure	11	8	2½

REVENUE.

1933—1934	£	s.	d.
Carrots	2	4	10
Onions	0	5	10
Beet	1	6	2
Tomatoes	0	12	11
Beans	0	0	6
	4	10	3
Previous Revenue.	5	7	2
Total Revenue ..	9	17	5
Profit 1934 ..		—	
Deficit 1934 ..	0	17	1½
Total Profit ..		—	
Total Deficit ..	1	10	9½

PLOTS 4 & 5.

First Ratoons 1931
Vegetables 1932
Stock Plot 1933
Vegetables 1934
Cultivated April 1934.
20 Beds plot 4 carrots
20 Beds plot 5 Beet
45 banks in each plot Tomatoes. 40 red Ponderosa. 5 golden Ponderosa. 10 banks in each plot Egg plants.

EXPENDITURE.

1933—1934	£	s.	d.
Forking	0	9	3
Lining	0	1	1
Banking	0	10	6
Making Beds ..	0	1	1
Fertilizers ..	0	10	8
Application of Fertilizers ..	0	2	0
Weeding etc. ..	0	14	9
Egg Plants ..	0	3	2
Beet	0	8	10
Carrots	0	5	10
Tomatoes	0	7	10
Insect control ..	0	0	9
	3	15	9
Previous Exp. ..	11	9	6
Total Expenditure.	15	5	3

REVENUE.

1933—1934	£	s.	d.
Nil.			
Previous Revenue.	14	12	0
Total Revenue ..	14	12	0
Profit 1934 ..		—	
Deficit 1934 ..	3	15	9
Total Profit ..		—	
Total Deficit ..	0	13	3

MODEL ALLOTMENT.

TABLE A.

TABLE OF PLOT EXPENDITURE AND REVENUE.

PLOT 6.

First Ratoons ..	1931
Pigeon Peas	1932
Pigeon Peas	1933
Stock & Potatoes ..	1934

Peas destroyed March 1934.
Sweet Potatoes planted July 1934 in E portion.

EXPENDITURE.

1933—1934	£	s.	d.
Weeding Peas ..	0	1	6
Reaping Peas ..	0	2	8
Destroying Peas ..	0	1	6
	0	5	8
Forking	0	3	6
Lining	0	0	7
Banking	0	4	2
Weeding etc. ..	0	5	9
Planting and Supplying ..	0	1	11
	1	1	7
Previous Exp. ..	2	2	2
Total Expenditure	3	3	9

REVENUE.

1933—1934	£	s.	d.
Sale of Peas ..	0	2	6
Previous Revenue	1	6	4
Total Revenue ..	1	8	10
Profit 1934 ..		—	
Deficit 1934 ..	0	19	1
Total Profit ..		—	
Total Deficit ..	1	14	11

PLOT 7.

Prep. for Canes ..	1931
Plant Canes	1932
1st Ratoons	1933
Stock & Potatoes ..	1934

Cultivated E portion April 1934. Sweet Potatoes planted July 1934.

EXPENDITURE.

1933—1934	£	s.	d.
Weeding canes ..	0	1	3
Reaping canes ..	0	6	11½
	0	8	2½
Digging & removing stools	0	5	11
Forking	0	3	6
Lining	0	0	9
Banking	0	3	10
Weeding	0	3	5
Planting and Supplying ..	0	1	11
	1	7	6½
Previous Exp. ..	3	13	11
Total Expenditure	5	1	5½

REVENUE.

1933—1934	£	s.	d.
Canes	1	10	1
Previous Revenue	4	9	6
Total Revenue ..	5	10	7
Profit 1934 ..	0	2	6½
Deficit 1934 ..		—	
Total Profit ..	0	9	1½
Total Deficit ..		—	

PLOTS 8 & 9.

Prep. for Canes ..	1931
Plant Canes	1932
1st Ratoons	1933
Potatoes	1934

Cultivated April 1934. Sweet potatoes planted July 1934.

EXPENDITURE.

1933—1934	£	s.	d.
Weeding canes ..	0	2	6
Reaping canes ..	0	13	11
	0	16	5
Digging and removing stools ..	0	11	11
Forking	0	12	3
Lining	0	1	6
Banking	0	14	0
Weeding	0	11	3
Planting and Supplying ..	0	6	5
	3	13	9
Previous Exp. ..	7	7	9
Total Expenditure	11	1	6

REVENUE.

1933—1934	£	s.	d.
Canes	3	0	1
Previous Revenue.	8	18	11
Total Revenue ..	11	19	0
Profit 1934 ..		—	
Deficit 1934 ..	0	13	8
Total Profit ..	0	17	6
Total Deficit ..		—	

PLOTS 10—12.

Prep. for Canes ..	1931
Plant Canes	1932
1st Ratoons	1933
2nd Ratoons	1934

Trash ranged and both banks split March 1934.

EXPENDITURE.

1933—1934	£	s.	d.
Weeding canes ..	0	3	5
Reaping canes ..	1	6	4½
	1	9	9½
Splitting Banks ..	0	6	0
Ranging trash ..	0	2	3
Supplying ..	0	1	0
Weeding	0	4	1
	2	3	1½
Previous Exp. ..	11	4	0
Total Expenditure	13	7	1½

REVENUE.

1933—1934	£	s.	d.
Canes	6	12	2
Previous Revenue	14	12	9
Total Revenue ..	21	4	11
Profit 1934 ..	4	9	0½
Deficit 1934 ..		—	
Total Profit ..	7	17	9½
Total Deficit ..		—	

MODEL ALLOTMENT.

TABLE A.

TABLE OF PLOT EXPENDITURE AND REVENUE.

PLOTS 13—17.

Provisions	1931
Prep. for Canes	1932
Plant Canes	1933
1st Ratoons	1934

Trash ranged and both banks split March 1934.

EXPENDITURE.

1933—1934	£	s.	d.
Weeding Canes	0	2	6
Reaping	3	3	6
	3	6	0
Splitting Banks	0	10	0
Ranging Trash	0	6	9
Weeding	0	6	10
	4	9	7
Previous Expenditure	28	1	10
Total Expenditure	32	11	5

REVENUE.

1933—1934	£	s.	d.
Canes	13	11	9
Previous Revenue	22	10	5
Total Revenue	36	2	2
Profit 1934	9	2	2
Deficit 1934		—	
Total Profit	3	10	9
Total Deficit		—	

PLOTS 18—22.

Provisions, Vegetables and Cotton	1931
Provisions and Vegetables	1932
Prep. for Canes	1933
Plant Canes	1934
Plot 18 P.O.J. 2878 planted December	1934
Plots 19 — 22 B.726 „ „	1934

Tomatoes and Onions grown as catch crops in plots 18, 19 and 21.

EXPENDITURE.

1933—1934	£	s.	d.
Weeding	1	16	6
Lining	0	2	8
Trenching	1	18	7
Manure & Manuring	0	19	4
Plants & Planting	2	12	10
Cultivation & Farming	0	16	5
Trash Mulching	0	4	2
Special Onion Cultivation including plants	0	13	5½
Special Tomato cultivation including plants	2	19	11
	12	3	10½
Previous Expenditure	18	19	5
Total Expenditure	31	3	3½

REVENUE.

1933—1934	£	s.	d.
Tomatoes	5	5	9
Onions	0	13	10
	5	19	7
Previous Revenue	15	7	11
Total Revenue	21	7	6
Profit 1934		—	
Deficit 1934	6	4	3½
Total Profit		—	
Total Deficit	9	15	9½

PLOTS 23—27.

Vegetables & Stock	1931
Provisions	1932
Provisions	1933
Preparation for Canes	1934
Plot 23 Yams reaped Jan.—March	1934
„ 24 Eddoes „ „	1934
„ 25 Cassava „ „	1934
Plots 26 and 27 Potatoes reaped May—July	1934

Banks roughly remade and green dressing crops planted. Canavalli in 23. Pigeon Peas in others. Destroyed July—Sept. and started preparation for canes.

EXPENDITURE.

1933—1934	£	s.	d.
Yam crop	0	5	1½
Eddoe crop	0	5	0
Cassava crop	0	5	3
Potato crop	1	15	10
	2	11	2½
Green Dressing Crops	2	2	5
Forking	0	12	10
Lining	0	2	7
Banking	0	14	5
Trenching	1	1	0
Special tomato cultivation	0	4	3
	7	8	8½
Previous Expenditure	20	11	1
Total Expenditure	27	19	9½

REVENUE.

1933—1934	£	s.	d.
Yams	1	1	4
Eddoes	1	18	0
Cassava	1	1	4
Potatoes	3	15	0
	7	15	8
Previous Revenue	19	12	9
Total Revenue	27	8	5
Profit 1934	0	6	11½
Deficit 1934		—	
Total Profit		—	
Total Deficit	0	11	4½

TABLE OF PLOT EXPENDITURE AND REVENUE.

PLOTS 28—30.

Fruit.

EXPENDITURE.

1933—34	£	s.	d.
Weeding	3	6	10
Watering	0	7	11
Forking	0	2	0
Spraying	0	0	3
Trenching	0	1	0
Supplying	0	10	4
Reaping Peas	0	0	4
Beds for Vegetables	0	10	9
Planting Vegetables	0	2	7
	5	2	0
Previous Expenditure	11	12	2
Total Expenditure	16	14	2

REVENUE.

1933—34	£	s.	d.
Guavas	0	2	0
Previous Revenue		—	
Total Revenue	0	2	0
Profit 1934		—	
Deficit 1934	5	0	0
Total Profit		—	
Total Deficit	16	12	2

MODEL ALLOTMENT.

TABLE B.

TABLE OF CROP EXPENDITURE AND REVENUE.

CROP.	Plot	Expenditure	Revenue	Profit	Loss
		£ s. d.	£ s. d.	£ s. d.	
Sweet Potatoes	1 & 2. 26 & 27	5 16 1	7 3 6	1 7 5	..
Peas, Beans and Vegetables	3	4 2 7½	4 10 3	0 7 7½	..
Pigeon Peas	6	1 13 8	0 13 10	..	0 19 10
1st Ratoons	7—12	5 12 6	9 15 5	4 2 11	..
Plant Canes and Catch Crop*	13—17	21 1 6	30 10 8	9 9 2	..
Catch Crop (Tomatoes & Onions)	18—22	3 13 4½	5 19 7	2 6 2½	..
Yams	23	2 5 3½	1 1 4	..	1 3 11½
Eddoes	24	1 7 2	1 18 0	0 10 10	..
Cassava	25	1 4 0	1 1 4	..	0 2 8

* Plant Cane. Expenditure £16. 6s. 8d. Revenue £13. 16s. 1d. Loss £0. 10s. 7d.
Catch crop „ £4. 14. 10d. „ £14. 4s. 7d. Profit £9. 19s. 9d.

ANALYSIS OF REVENUE AND EXPENDITURE—BEANS AND VEGETABLES.

	Onions	Tomatoes	Carrots	Turnips	Beet	Beans
Slips or Seeds	0 4 0	0 2 2	0 3 0	0 1 0	0 5 0	..
Planting	0 0 9	0 0 9	0 0 11	0 0 3	0 0 9	..
Staking	..	0 2 9	..	..	..	..
Insect Control	0 4 6	0 16 4½	..	0 1 0	0 4 10	..
Reaping & Transport	..	0 1 2	..	..	..	..
Marketing	..	0 1 4	0 2 11	..	0 2 3	0 0 4
Manure & Manuring	..	..	0 1 6	0 0 5	0 1 1	..
General Cultivation	0 1 8	0 4 2	0 1 7	0 0 5	0 1 2	0 9 1
Weeding	0 0 9	0 1 8	0 0 8	0 0 6	0 0 2	..
Destroying	..	..	..	..	..	0 1 8
Total Cost	0 11 8	1 10 4½	0 10 7	0 3 7	0 15 3	0 11 1
Revenue	0 5 10	0 12 11	2 4 10	..	1 6 2	0 0 6
Profit	..	..	1 14 3	..	0 10 11	..
Loss	0 5 10	0 17 5½	..	0 3 7	..	0 10 7

SUGAR CANE EXPERIMENTS.

In view of the elaborate series of expermients which are now being conducted by this Department under the direction of Mr. Turner and in co-operation with the Sugar Cane Investigation Committee it has appeared desirable to prepare a summary of the results of manurial and cultural experiments carried out with sugar cane in the past. This summary is included in the present report as the results of the new series of experiments will be available from 1935 on.

A Note on Manurial and Cultural Experiments with Sugar Cane in Antigua Prior to 1930.

Introductory. Manurial experiments with sugar cane commenced in 1891 and were carried on until 1897, but the results of these experiments were somewhat obscured owing chiefly to the prevalence of rind fungus.

Preliminary Experiments with Nitrogen only.

In 1899 with the creation of the Imperial Department of Agriculture these experiments were resumed on a more extensive scale, and during the season 1899—1900 experiments were conducted with plant canes of the White Transparent type at Skerrits, Bendals, Blubber Valley, Tomlinsons, Thibous, The Diamond and Long Lane, to determine the effect of Nitrogen alone, applied as Sulphate of Ammonia and as Nitrate of Soda. The season was very dry and only small increases were observed. The following table contains the mean results from the seven stations.

TABLE I.

MEANS DEDUCED FROM ALL THE PLOTS OF PLANT CANES IN EXPERIMENTS WITH NITROGEN, 1899–1900.

Number of Plots.	Treatment.	Cane Tons per acre.	% No. Nitrogen.
28 ..	No Nitrogen	23.7	100
14 ..	30 lb. Nitrogen as Sulphate of Ammonia	25.1	106
14 ..	60 lb. Nitrogen as Sulphate of Ammonia	24.2	102
14 ..	30 lb. Nitrogen as Nitrate of Soda	23.9	101
14 ..	60 lb. Nitrogen as Nitrate of Soda	24.8	105

During the season 1900-1901 experiments were continued with the ratoon canes at six of the stations listed above, nitrogen alone being applied in the same forms and in the same quantities as were used in the experiments as plant cane.

Although better than the 1899-1900 season, the 1900-1901 season was again one of scanty rainfall, but even under these circumstances marked increases followed the application of Nitrogen. The mean results from the six stations are shown in Table II.

TABLE II.

MEANS DEDUCED FROM ALL THE PLOTS OF RATOON CANES IN EXPERIMENTS WITH NITROGEN, 1900–1901.

Number of Plots.	Treatment.	Cane Tons per acre.	% No. Nitrogen.
24 ..	No Nitrogen	16.4	100
12 ..	30 lb. Nitrogen as Sulphate of Ammonia	19.5	119
12 ..	60 lb. Nitrogen as Sulphate of Ammonia	20.6	126
12 ..	30 lb. Nitrogen as Nitrate of Soda	19.1	116
12 ..	60 lb. Nitrogen as Nitrate of Soda	20.2	123

Experiments with Nitrogen alone were discontinued after the season 1900-1901, a somewhat extensive series of experiments to ascertain the effect of nitrogen in various forms, of phosphate in two forms and of potash being started with plant canes during 1900-1901 and a similar series with the resulting ratoons in the following season.

Experiments with Nitrogen, Potassium and Phosphorous, with Plant Canes.

The series of experiments with plant canes was continued until the season 1906-1907. During the earlier years certain of the trials were carried out in fields which received no basal dressing of pen manure, the majority of the experiments, however were conducted on fields which had received a basal dressing of about 20 tons pen manure.

Experiments in which there was no basal dressing were conducted at Parham New Work and at Bendals during the seasons 1900-1 and 1901-2. During both seasons the plots at Bendals were located on land in poor physical condition. Neither pen manure nor artificials caused marked increases in yield although in the season 1901-2 when there was ample rainfall there were increases from nitrogen when applied together with phosphate and potash. Small increases also resulted from phosphate and potash. As a result of the experiments for the two seasons it is concluded that it is not remunerative to apply artificials to land in poor physical condition.

At Parham New Work in both seasons the experiments were conducted on land in good tilth. In the case of the 1900-1901 experiments an application of 20 tons pen manure produced an increase in yield of 50% ; Nitrogen caused substantial increases when applied together with potash and phosphate and smaller increases when applied alone. Phosphate was not beneficial, but potash when applied with nitrogen and phosphate caused small increases.

In the case of the 1901-1902 experiments although the rainfall was ample and the yields generally were good there was no response either to pen manure or artificial fertilizers indicating a high degree of fertility for the whole field.

The report on Sugar Cane Experiments in the Leeward Islands for the season 1911-12 contains a summary of the experiments with plant canes conducted on fields which had received a basal dressing of 20 tons pen manure during the period 1900-1901 to 1905-1906. Table III is based on this summary.

As the result of the experiments with plant cane, certain conclusions were reached and although the summary which appeared in the report on Sugar Cane Experiments in the Leeward Islands is based on experiments conducted in St. Kitts as well as on those conducted in Antigua these conclusions apply sufficiently well to the Antigua experiments to be included in these notes.

Apparently under average climatic conditions an application of 20 tons of pen manure per acre provided sufficient plant food for a plant cane crop and although additional applications of pen manure and of artificials might under certain circumstances cause small increases in yield, the water supply was the limiting factor and such increases were not likely to be remunerative. Profound changes in methods of cultivation, such as deeper ploughing might alter conditions and render further investigations necessary.

In cases where adequate quantities of pen manure were not available it was suggested that in years of average rainfall and in the case of land in good physical condition applications of 2 cwt. Sulphate of Ammonia, ½-1 cwt. Sulphate of Potash and 1 cwt. of basic phosphate or superphosphate per acre might prove beneficial.

With a view to obtaining further information as to the use of artificials in cases where pen manure could not be obtained a new series of experiments with plant cane on fields which had not received pen manure was started in the season 1913-14 with plots at Fitches Creek. Unfortunately this experiment was lost.

During the season 1914-15 a similar experiment was conducted at Cassada Garden, but unfavourable weather masked the action of the manures.

During the season 1915-16 a similar experiment was carried out at Parham New Work, and also a further experiment in which nitrogen was applied in the form of nitrate of lime. Increases were obtained with nitrogen especially when applied together with phosphate and potash. Unfortunately as a result of the

war these experiments were discontinued before the accumulation of results allowed the formulation of definite conclusions with respect to Antigua. The conclusions contained in the Reports on Sugar Cane Experiments in the Leeward Islands and which are based on the few Antigua experiments together with experiments conducted in St. Kitts were that nitrogen was the element most required but that nitrogen produced the greatest increases in the presence of phosphate and potash and that the best substitute for pen manure would probably be a mixture supplying Nitrogen, Potash and Phosphate.

In concluding the section dealing with plant cane experiments the following quotation from the Report on Sugar Cane Experiments in the Leeward Islands 1913-14 may be of interest as indicating the small amount of information really available on this important question of the substitution of artificial fertilizers for organic manures "No evidence is available from these experiments, nor are there records as the results of planters' experience in these islands to show the effect of withholding organic manures from cane lands for long periods of time while their place is supplied by equivalent dressings of artificial manures."

As regards experiments with Ratoon Canes, the series which began in the season 1901-1902 in which applications of artificials were made to the plots which had received the same treatments as plant canes, was continued until 1904-5. A new series was then started in which the artificials were applied to ratoons on fields which had received no artificials as plant canes. The summarised results from experiments in this series at Cassada Garden, Bendals Parham New Work and Friars Hill for the period 1904-5 to 1911-12 appear in the Report on Sugar Cane Experiments in the Leeward Islands for 1911-12 and are shown in Table IV.

The following general conclusions are based on the result of the various experiments conducted with ratoons. The growth of ratoons is largely dependent on the thorough preparation of the soil for the plant cane crop, on rainfall and on incidence of root disease. In seasons of normal rainfall applications of quickly acting nitrogenous manures (Sulphate of Ammonia, Nitrate of Soda or Nitrate of Lime) have produced remunerative increases. Applications containing 40 lb. Nitrogen appear to have been adequate and little if any advantage has followed applications of phosphate and potash with the nitrogen.

As a general rule the increased yields obtained in the earlier series of ratoon experiments (where applications of artificials were made to plots which had received the same treatments as plant canes) were rather larger than those resulting from similar applications in the new series although climatic conditions were no better in the former case. This fact has been attributed to a residual action of the manures applied to the previous crop and this theory has been confirmed by measuring this residual effect on second ratoons which themselves received no artificials—artificials being supplied to the plots as first ratoons.

Experiments with Molasses.

Experiments in which molasses was applied to ratoons were conducted during the season 1908-9 to 1912-13. Increases have at times been observed especially at Cassada Garden but the general conclusion reached was that although small gains might ensue from the application of molasses to ratoon canes, these were not likely to prove profitable unless the value of exhausted molasses was very low.

The increases obtained at Cassada Garden in 1908-9 and in 1910-11 are shown in the following table.

Year.	No. Molasses. Tons Cane per Acre		200 gals. Molasses. Tons Cane per Acre		400 gals. Molasses. Tons Cane per Acre	
	Actual	% of No. Molasses	Actual	% of No. Molasses	Actual	% of No. Molasses
1908-9	8.4	100	11.6	138	16.1	192
1910-11	6.5	100	10.0	154	10.0	154

Experiments with molasses on plant cane were conducted in 1914-15 at Cassada Garden and during 1915-16 at Parham New Work. Unfortunately the individual results from these two stations have not appeared in the reports on Sugar Cane Experiments in the Leeward Islands the summary appearing in 1915-16 being based on the results at these stations together with the results from two stations in St. Kitts. As a mean of all stations for the two seasons, increases of 14-17% have been obtained from applications of molasses.

Liming Experiments.

An experiment in which calcium carbonate (marl) was applied to a heavy non calcareous soil was conducted at Bendals in the season 1903-4. There were 36 different treatments in the manurial experiments with plant canes at that station, 34 of these treatments were given to duplicate plots and the remaining two to 4 plots each. One half of the plots of each treatment were marled and one half were not treated in this way so that the mean results for marl and for no marl are each derived from 38 plots.

These plots were reaped as first ratoons during the following season. The average yields were:—

Plant canes marled	24.8	tons per acre.		Plant canes unmarled	23.3	tons per acre		
1st Ratoons	„ 5.8	„	„ „	1st Ratoons	„ 5.0	„	„ „	
Two crops	„ 30.6				„ 28.3			

Cultivation of Ratoons.

In 1907-8 the question was raised as to whether or not the tillage commonly given to ratoon canes might not prove injurious rather than beneficial if given some time after the reaping of the previous crop. In 1909-10 experiments to determine this point were conducted at Friars Hill and Parham New Work: at the former station alternate banks in the tilled plots were ploughed before the ratoon canes had made much growth and at the latter station after the ratoons had made very considerable growth. In both cases the tilled plots gave increased yields.

In the season 1911-12 a further experiment at Parham New Work in which tillage was given after the ratoons had made a certain amount of growth showed practically no difference as a mean of 33 plots of each treatment.

The rainfall at the stations concerned for the period April 1909—March 1910 was, Friars Hill 42.15 and Parham New Work 45.60. The rainfall at Parham New Work for the period April 1911—March 1912 was 34.98 ins.

TABLE III.

Plant Canes.

SUMMARY BASED ON AVERAGE RETURNS FROM MANURIAL PLOTS FROM 1900-1—1905-6.

	Cassada Garden.		Bendals.		Parham New Work.	
Nitrogen Series with P_2O_5 & K_2O	Tons per Acre.	% $N._0$	Tons per Acre	% $N._0$	Tons per Acre.	% $N._0$
N_0	22·00	100	20·80	100	23·60	100
N_{40}	23·60	107	23·15	111	24·90	106
N_{60}	24·50	111	23·30	112	24·80	105
Nitrogen Series without P_2O_5 & K_2O						
N_0 (no manure)	21·00	100	21·00	100	20·30	100
N_{60}	23·80	113	21·50	102	22·70	112
Mean of N_0 & N_{60} with P_2O_5 & K_2O	23·25		22·05		24·20	
Mean of N_0 e N_{60} without P_2O_5 & K_2O	22·40		21·25		21·50	
Mean of N_0	21·50	100	20·90	100	21·95	100
„ „ N_{40}	23·60	110	23·15	111	24·90	113
„ „ N_{60}	24·15	112	22·40	107	23·75	108
N in one application	24·40	114	22·25	106	24·07	110
N in two applications	23·50	109	23·05	110	24·20	111
N as Sulphate of Ammonia	24·10	112	22·20	106	23·50	107
N as Nitrate of Soda	23·80	111	23·10	110	24·70	113
Phosphate Series with N & K_2O		% P_0		% P_0		% $P._0$
P_0	24·20	100	23·00	100	20·50	100
P_{40}	24·45	101	22·65	98	19·90	97
P_{60}	24·15	99	25·00	109	21·60	106
P_{80}	25·60	106	24·80	108	22·00	107
Basic phosphate 40ll & 60ll (means)	24·55	102	22·05	96	20·95	102
Superphosphate 40ll & 60ll (means)	24·05	99	25·60	111	20·60	101
Potash Series with N & P_2O_5		% K_0		% K_0		% K_0
K_0	22·40	100	22·00	100	23.50	100
K_{20}	23·30	104	23·30	106	23·80	107
K_{40}	24·40	109	23·20	106	25·50	108
K_{60}	25·00	112	20·10	91	23·00	98

N.B.—The number written below the symbol N. K or P. indicates the application per acre. Thus N_{40} = 40ll N per acre. P_{40} = 40ll phosphosic anhydride per acre.

TABLE IV.

First Ratoons.

SUMMARY BASED ON AVERAGE RETURNS FROM MANURIAL PLOTS FROM 1904-5—1911-12.

	Cassada Garden.		Bendals.		Parham New Work		Friars Hill.	
Nitrogen Series with P_2O_5 & K_2O	Tons per Acre.	% N_0	Tons per Acre.	% N_0	Tons per Acre.	% N_0	Tons per Acre.	% N_0
N_0	9·10	100	12·30	100	16·10	100	15·60	100
N_{40}	13.10	144	14·70	120	17·50	109	16·80	108
N_{60}	13·50	148	13·40	109	18·00	112	17·30	111
Mean	11·90		13·50		17·20		16.60	
Nitrogen e ries without P_2O_5 & K_2O								
N_0 (no manure)	8·80	100	10·50	100	14·40	100	14·50	100
N_{40}	13·20	150	13·00	124	20·40	142	18·60	128
N_{60}	12·50	142	13·10	125	18·60	129	16·40	113
Mean	11·50		12·20		17·80		16·50	
Mean N_0	8·95	100	11·40	100	15·25	100	15·05	100
„ N_{40}	13·15	147	13·85	121	18·95	124	17·70	117
„ N_{60}	13·00	145	13·25	116	18·30	120	16·85	112
N in one application	13·00	145	13·30	117	18·60	122	17·10	114
N in two applications	13·20	147	13·80	121	18·70	123	17·50	116
N as sulphate of ammonia	12·025	134	13·30	117	18·90	124	17·00	113
N as nitrate of soda	14·15	158	13·80	121	18·49	121	17·50	116
Phosphate Series with N & K_2O		% P_0		% P_0		% P_0		% P_0
P_0	13·30	100	13.00	100	16·70	100	14·90	100
P_{40}	12·30	92	13·25	102	17·45	104	17·05	114
P_{60}	11·85	89	12·20	94	16·90	101	17·05	114
V. Phosphate	12·90	97	13·00	100	17·05	102	17·10	115
Super phosphate	11·25	85	12·45	96	17·30	103	17·00	114
Potash Series with N & P_2O_5		% K_0		% K_0		% K_0		% K_0
K_0	10·40	106	11·60	100	16·50	100	17·00	100
K_{20}	11·80	113	13·10	113	17·00	103	16·70	99
K_{40}	13·50	130	14·80	128	16·50	100	16·90	99
K_{60}	13·40	129	12·90	111	18·00	109	17·40	102

N.B.—The number written below the symbol N. K or P. indicates the application per acre. Thus N_{40} = 40ll N per acre. K_{40} = 40ll potash per acre.

Present Sugar Cane Experiments.

Varietal Experiments.

(A) Plant Cane.

The varietal experiments planted in the season 1932–33 were reaped as plant canes during the season under review. At each station six varieties were compared with a standard variety; the lay out was eight randomised blocks the individual varietal plots each consisting of two rows containing 20 or 30 stools. These plots were separated from each other by single rows of the standard.

This lay out has not proved entirely satisfactory chiefly owing to suppression of the standard when planted alongside of P.O.J.2878 or some other vigorous variety, so that in some cases it has not been possible to include the yields of the standard variety in the results of the experiment and in some other cases it has been necessary to compute the yield of the standard, only from those rows showing no definite evidence of suppression.

The following tables show the varieties cultivated at the various stations, the average yields in tons cane and tons sugar per acre and the average sucrose content of the juice expressed in lb per gal.

TABLE V.

Variety Trial. Plant Cane — Cochranes.

Soil Type. Heavy Calcareous.

Planted. 23/11/32. — Reaped. 19-21/2/34.

Rainfall.			Average rainfall for similar period based on returns for 10 years.	
	Dec 1932	2.70 ins.	Dec.	3.49 ins.
	1933	36.83 „	Jan-Dec.	37.85 „
	Jan-Feb 1934	2.15 „	Jan-Feb.	2.80 „
Total		41.68 „	Total	44.14 „

Variety.	Tons Cane per acre	Tons Sugar per acre	Sucrose lb. per gal in juice.
B.891	39.3	5.87	2.215
B.11569	37.1	5.03	2.007
B.374	36.5	5.00	2.036
P.O.J.2878	35.9	5.28	2.202
B.H.10.12*	34.3	5.17	2.254
B.726	34.0	5.15	2.270
B.4507	27.2	3.41	1.867

* Standard variety.

TABLE VI.

Variety Trial. Plant Cane — Tomlinsons.

Soil Type. Clay Tuff (saline)

Planted. 21/12/32 — Reaped 23-27/2/34.

Rainfall. Dec 1932 4.08 ins.
1933 38.45 „
Jan-Feb 1934 1.84 „
Total 44.37 „

Average rainfall for similar period based on returns for 10 years.
Dec 2.64 ins.
Jan-Dec 36.59 „
Jan-Feb 2.69 „
Total 41.92 „

Variety.	Tons Cane per acre	Tons Sugar per acre	Sucrose lb. per gal in juice
Co.213	23.8	3.10	1.934
P.O.J.2878	20.9	3.14	2.254
G.119	20.5	2.94	2.124
B.726	18.5	2.90	2.350
B.891	18.3	2.69	2.194
B.H.10.12*	17.8	2.78	2.338
G.153	14.7	1.93	1.950

* Standard variety; yield calculated from all rows save those bordering P.O.J.2878 which appear to be suppressed.

TABLE VII.

Variety Trial. Plant Cane. — Parrys.

Soil Type. Calcareous.

Planted. 14/12/32. — Reaped. 14-17/3/34.

Rainfall. Dec 1932 4.53 ins.
1933 40.23 „
Jan-Mar 1934 3.01 „
Total 47.77 „

Average rainfall for similar period based on returns for 10 years.
Dec 3.21 ins.
Jan-Dec 41.96 „
Jan-Mch 5.56 „
Total 50.73 „

Variety.	Tons Cane per acre	Tons Sugar per acre	Sucrose lb. per gal in juice
G.119	54.9	7.21	1.945
B.891	51.3	8.18	2.384
B.726	48.5	7.59	2.338
B.374	45.1	6.69	2.223
P.O.J.2878	44.7	6.78	2.270
B.6308*	37.0	4.62	1.841
B.3922	36.1	5.28	2.163

* Standard variety. Yield calculated from rows bordering B.3922.

TABLE VIII.

Variety Trial. Plant Cane. Yorkes.

Soil Type. Alluvial.

Planted. 15/12/32. Reaped. 20-21/3/34.

Rainfall. Dec 1932 4.29 ins.
1933 43.89 „
Jan-Mch 1934 5.14 „

Total .. 53.32 „

Average rainfall for similar period based on returns for 10 years.
Dec 3.23 ins.
Jan-Dec 43.16 „
Jan-Mch 5.63 „

Total .. 52.02 „

Variety.	Tons Cane per acre.	Tons Sugar per acre.	Sucrose lb. per gal in juice
P.O.J.2878	32.0	4.54	2.129
B.726	28.1	4.29	2.283
B.4507	27.8	3.41	1.823
B.891	27.0	4.24	2.358
B.374	26.7	3.89	2.176
B.6308*	24.3	2.62	1.602
Co.213	23.2	2.75	1.776

* Standard variety. Yield calculated from all rows and may suffer from suppression of B.6308 by more virogous varieties.

TABLE IX.

Variety Trial. Plant Cane. Comfort Hall

Soil Type. Light Calcareous.

Planted. 30/11/32. Reaped 17-19/4/34.

Rainfall. Dec 1932 4.22 ins.
1933 38.64 „
Jan-Mch 1934 3.49 „

Total 46.35 „

Average rainfall for similar period based on returns for 10 years.
Dec 2.63 ins.
Jan-Dec 37.83 „
Jan-Mch 4.82 „

Total 45.28 „

Variety.	Tons Cane per acre	Tons Sugar per acre	Sucrose lb. per gal in juice.
P.O.J. 2878	44.5	6.69	2.259
B.891	43.6	7.10	2.434
B.11569	37.0	5.24	2.106
B.H.10.12	36.8	5.87	2.382
B.726	36.2	5.53	2.288
B.3922	23.5	3.34	2.114
B.4507*			2.210

* Standard variety. Yield not calculated as this variety was badly suppressed by quicker growing varieties.

TABLE X.

Variety Trial. Plant Cane. The Cotton.

Soil Type. Calcareous.

Planted. 7/12/32. Reaped. 25-27/4/34.

Rainfall.			Average rainfall for similar period based on returns for 10 years.	
Dec.	1932	4.20 ins.	Dec	2.67 ins.
	1933	32.59 „	Jan-Dec	37.66 „
Jan-Apl.	1934	3.47 „	Jan-Apl	6.36 „
Total ..		40.26 „	Total ..	46.69 „

Variety.	Tons Cane Per acre.	Tons Sugar Per acre.	Sucrose lb. per gal. in juice.
P.O.J.2878	38.7	6.07	2.353
B.891	34.9	5.76	2.470
B.11569	34.7	5.26	2.267
B.374	32.2	4.97	2.327
G.119	31.4	4.52	2.140
B.726	27.2	4.52	2.495
B.4507*			2.311

* Standard variety. Yield not calculated as this variety was badly suppressed by quicker growing varieties.

The following table shows the summarised yields for the three varieties B.891, B.726 and P.O.J.2878 which have been grown at all the six stations.

Stations.	B.891		B.726		P.O.J.2878	
	Tons Cane	Tons Sugar	Tons Cane	Tons Sugar	Tons Cane	Tone Sugar
Cochranes	39.3	5.87	34.0	5.15	35.9	5.28
Tomlinsons	18.3	2.69	18.5	2.90	20.9	3.14
Parrys	51.3	8.18	48.5	7.59	44.7	6.78
Yorkes	27.0	4.24	28.1	4.29	32.0	4.54
Comfort Hall	43.6	7.10	36.2	5.53	44.5	6.69
Cotton	34.9	5.76	27.2	4.52	38.7	6.07
Mean	35.7	5.64	32.1	4.99	36.1	5.42

B.891 has done particularly well on the calcareous soils. This cane together with B.726 has a high sucrose content throughout the grinding period covered by these experiments.

The highest individual tonnage recorded is 54.9 tons cane per acre in the case of G.119 at Parrys, but the sucrose content of the juice was poor compared with that of B.891, B.726 and P.O.J.2878.

(B) Ratoons.

The varietal trials at Millars, Jolly Hill and Fitches Creek reaped as plant canes during 1933 were reaped as first ratoons during the season under review. At Millars the lay out was four randomised blocks and at Jolly Hill six randomised blocks. At Fitches Creek there were two separate experiments in each case the lay out being six randomised blocks.

The following tables show the varieties cultivated at the various stations, the average yields in tons cane and tons sugar per acre and the average sucrose content of the juice expressed in lb. per gallon.

TABLE XI.

Varietal Trial. First Ratoons. Millars.

Soil Type. Calcareous.

Reaped as plant canes. 7–11/2/33. Reaped as ratoons 11–13/4/34.

Rainfall. Mch–Dec, 1933.. 37.75 ins.
Jan–Mch, 1934.. 2.60 ins.

Total .. 40.35 ins.

Average rainfall for similar period based on returns for 10 years.
Mch–Dec. .. 34.80 ins.
Jan–Mch .. 5.17 ins.

Total .. 39.97 ins.

Variety.	No. of Replicates.	Tons cane per acre.	Tons sucrose per acre.	Sucrose lb. per gal in juice.
B.4507 ..	4	23.1	3.3	2.116
P.O.J.2878 ..	4	22.5	3.4	2.272
B.417 ..	4	20.5	2.9	2.129
B.11569 ..	4	19.8	2.7	2.033
B.H.10.12 ..	4	18.7	3.0	2.387
S.C.12.4 ..	4	15.1	2.1	2.077

Differences of tons cane per acre will not exceed 4.2 tons by chance more than once in twenty times. B.4507 is significantly better than B.H.10.12 and S.C.12.4, and P.O.J.2878 is significantly better than S.C.12.4.

TABLE XII.

Varietal Trial. First Ratoons. Jolly Hill.

Reaped as plant canes. 1–4/5/33. Reaped as ratoons. 22–27/3/34

Rainfall. May–Dec., 1933.. 36.74 ins.
Jan–Mch., 1934.. 5.14 ins.

Total .. 41.88 ins.

Average rainfall for similar period based on returns for 10 years.
May–Dec. .. 34.12 ins.
Jan–Mch .. 5.65 ins.

Total .. 39.77 ins.

Variety.	No. of Replicates.	Tons cane per acre.	Tons sucrose per acre.	Sucrose lb. per gal in juice.
P.O.J.2878 ..	6	20.8	3.1	2.231
B.891 ..	6	19.2	3.1	2.420
B.726 ..	6	18.5	3.0	2.450
B.381 ..	6	17.3	2.6	2.275
B.374 ..	6	16.7	2.5	2.207
B.H.10.12 ..	6	16.5	2.7	2.485

Differences of tons cane per acre will not exceed 1.77 tons by chance more than once in twenty times. P.O.J.2878 is significantly better than B.726, B.381, B.374 and B.H.10.12. B.891 is significantly better than B.381, B.374, and B.H.10.12, B.726 than B.374 and B.H.10.12.

TABLE XIII.

Varietal Trial. First Ratoons. Fitches Greek (Section 1).

Soil Type. Calcareous heavy

Reaped as plant canes. 21–28/2/33. Reaped as ratoons. 28/5/34–1/6/34.

Rainfall. Mch–Dec., 1933.. 28.01 ins.
Jan–May, 1934.. 6.31 ins.

Total .. 34.32 ins.

Average rainfall for similar period based on returns for 10 years.
Mch–Dec. .. 35.61 ins.
Jan–May .. 10.47 ins.
Total .. 46.08 ins.

Variety.	No. of Replicates.	Tons cane per acre.	Tons sucrose per acre.	Sucrose lb. per gal. in juice.
B.11569	6	18.9		
P.O.J.2878 ..	6	17.5		
P.O.J.213 ..	6	14.9	Analyses not available.	
B.H.10.12 ..	6	14.0		
B.4507 ..	6	13.8		
G.140	6	12.5		

Differences in tons cane per acre will not exceed 2.20 tons by chance more often than once in twenty times. B.11569 and P.O.J.2878 are significantly better than the other four varieties.

TABLE XIV.

Varietal Trial. First Ratoons. Fitches Creek (Section 2)

Soil Type. Calcareous heavy.

Reaped as plant canes. 26–28/4/33. Reaped as ratoons. 4–7/6/34.

Rainfall. May–Dec., 1933.. 24.08 ins.
Jan–May, 1934.. 6.31 ins.

Total .. 30.39 ins.

Average rainfall for similar period based on returns for 10 years.
May–Dec. .. 32.48 ins.
Jan–May .. 10.47 ins.
Total .. 42.95 ins.

Variety.	No. of Replicates.	Tons cane per acre.	Tons sucrose per acre.	Sucrose lb. per gal in juice.
B.11569 ..	6	21.8	3.3	2.291
P.O.J.2878 ..	6	18.5	3.0	2.400
P.O.J.213 ..	6	15.8	2.2	2.093
G.119 ..	6	15.0	2.2	2.215
B.4507 ..	6	11.9	1.7	2.080
G.140 ..	6	7.7	1.1	2.119

Only two replicates analysed.

Differences in tons cane per acre will not exceed 3.5 tons by chance more often than once in twenty times. B.11569 is significantly better than P.O.J.213, G.119, B.4507 and G.140. P.O.J. 2878 is significantly better than G.119, B.4507 and G.140.

It will be observed that B.4507 has maintained its reputation of being a good ratooning cane when grown on a light calcareous soil, having headed the list at Millars with an average yield of 23.1 tons per acre. This is especially noteworthy as this variety gave easily the poorest yield when the experiment was reaped as plant cane.

It has at times been stated that P.O.J. 2878 has proved disappointing when cultivated as a ratoon owing largely to reduction in cane girth in the stubble crop. A large number of canes of small girth have indeed been observed in each of the four ratoon experiments in which this variety has been included but notwithstanding this fact P.O.J.2878 has headed the list at Jolly Hill and occupied the second place both at Millars and Fitches Creek.

For the two crops P.O.J.2878 has headed the list at Millars and Jolly Hill with a total yield of 80.3 tons per acre and 44.4 tons per acre respectively.

At Fitches Creek Section 1 it has occupied the second place with a yield of 55.1 tons per acre for the two crops, B.11569 occupying the first place with a total yield of 58 tons. At Fitches Creek Section 2 it has headed the list with a yield of 62 tons per acre for the two crops, B.11569 occupying the second place with a yield of 58.8 tons.

Varietal Differences in Germination.

In some parts of Antigua considerable difficulty in establishing fields of plant cane is frequently experienced as a result of irregularities in germination, and it is therefore important that new varieties introduced into cultivation should possess good powers of germination.

An attempt has been made in the case of the varietal experiments reaped in 1934 and also in the case of those planted in 1933 for the 1935 crop to obtain some numerical expression for the relative germinating powers of the more promising new varieties as compared with those of the three standard varieties B.H.10.12, B.11569 and B.4507.

The percentage germination experienced when any field is planted is determined by a number of factors in addition to that of varietal difference: environmental factors such as soil type, tilth, and climatic conditions are important so too are such factors as age of the cane from which the cutting has been selected, portion of the cane used and freedom of the seed piece from disease and injury.

For accuracy in determining varietal differences in germinating powers other factors should remain constant. So far, however, it has not been possible to conduct experiments in which the planting material of each variety has been standardised as to age and portion of the cane used, but in varietal experiments all varieties at any one station are subjected to the same environmental conditions and the planting material throughout is sound and free from disease so that any considerable varietal differences in germination may be observed.

In the case of the 1932–34 varietal experiments it was in some cases necessary to use planting material from ratoon canes so that it has not been possible to use the germination counts of all varieties at all stations in estimating the average varietal germination percentages. Table XV A refers to planting material derived from plant cane. The first column under each variety shows the percentage germination of the original planting and the second column the percentage germination of the first supplies. Germination percentages where cabbage plants are used are not included. Table XV B contains similar information with respect to the 1933–35 experiments.

TABLE XVA.

Varietal Germination Percentages. 1932–34 Experiments.

Station	P.O.J 2878		B. 726		B. 891		G. 119	B. 11569		B.H. 10. 12		B. 4507		Co. 213	
Cochranes		86	81	89	41	59		81	53		61		63		
Tomlinsons		58	71	69	56		43			82	78			83	35
Parrys		89		84	59	78	65								
Yorkes	24	68		28	37	35							18	78	45
Comfort Hall		82	43	75	37	59		23	40						
The Cotton	63	68		52	60	67		54	67			33	70		
	87	451	195	397	290	298	108	158	160	82	139	33	151	161	80
Average %	67		64		53		54	53		74		46		60	

TABLE XVB.

VARIETAL GERMINATION PERCENTAGES. 1933–35 EXPERIMENTS.

Station	P.O.J 2878		B. 726		B. 2935		S.C. 12.4		B. 11569		B.H. 10.12		B. 4507	
Paynters	75	96	84	81	86	100	84	94	78	73	42	95	71	76
Collins	94		94		84		77		95		98		65	
Thibous	99	100			96	75	94	83	90	60			73	30
	464		259		441		432		396		235		315	
Average %	93		86		88		80		79		78		63	

The varietal means shown in these tables are not strictly comparable since especially in the case of the 1932–34 experiments many varieties have been grown only at one or two of the stations. A comparison has therefore been made in the case of the 1932–34 experiments of each variety grown at any particular stations with P.O.J.2878 grown at the same stations: an arbitrary value of 100 has been assigned to P.O.J. 2878 and the relative germination values of the other varieties expressed as percentages of this figure.

For convenience in comparison the actual average germination percentages shown in Tables XVA and XVB have also been expressed in terms of the arbitrary 100 for P.O.J.2878 and the resulting three series of relative germination values are shown in Table XVC.

TABLE XVC.

RELATIVE VARIETAL GERMINATION VALUES EXPRESSED AS PERCENTAGES OF THE GERMINATION VALUE OF P.O.J.2878.

Variety.	Values calculated from 1932-34 means.	Values calculated from comparisons with P.O.J.2878.	Values calculated from 1933–35 mean.
P.O.J.2878	100	100	100
B.726	95	88	93
B.891	79	81	
B.2935			95
S.C.12.4			86
G.119	81	73	
B.11569	79	71	85
B.H.10.12	110	96	84
B.4507	69	65	68
Co.213	90	106	

It will be observed that the varieties P.O.J.2878 and B.726 are comparable in germinating powers with the standard varieties B.H.10.12 and B.11569, that the variety B.891 is comparable with B.11569 and that B.2935 grown at three stations during the 1933—35 season has proved a ready germinater. These four varieties are definitely superior to B.4507 in this respect.

The information available with respect to G.119 is inadequate for the expression of a definite opinion but this variety appears to possess only fair powers of germination.

Co.213 has been cultivated on a small scale for many years and has generally proved a cane of good germinating qualities.

Varietal Differences in Susceptibility to Moth Borer.

An attempt was made to measure varietal differences in intensity of borer attack in the case of the varietal experiments with plant cane at Parrys, Tomlinsons, Comfort Hall and Cochranes and of the similar experiments with first ratoons at Millars, Fitches Creek and Jolly Hill.

The method of determining percentage of infestation was that used by H. E. Box: two values were calculated—

(a) percentage of bored stalks in a given sample of canes.

(b) bored joints in the same sample expressed as a percentage of the total joints present.

At Cochranes and Tomlinsons twenty cane stalks were examined from each replicate but at the other stations the stool was taken as the unit and two complete stools were examined from each replicate.

Table XVIA shows the average infestation figures for the different varieties grown at each of the plant cane stations. Table XVIB shows the corresponding figures derived from the ratoon experiments.

The means for the various varieties in these tables are not strictly comparable since some varieties have been grown only at one or two stations and cannot be compared with varieties grown at other stations where the average intensity of borer attack may be very different. Each variety has therefore been compared with the variety P.O.J.2878 grown at the same station or stations and the relative infestation expressed as a percentage of the degree of infestation of P.O.J.2878 which has arbitrarily been fixed as 100%.

TABLE XVIA.

BORER INFESTATION. PLANT CANE.

Variety.	Parrys.		Tomlinsons.		Comfort Hall.		Cochranes.		Means.		% Infestation on basis of P.O.J. 2878 = 100.	
	S.	J.	S.	J.	S.	J.	S.	J.	S.	J.	S.	J.
P. O. J. 2878 ...	65	8·3	93	16·9	63	6·5	97	22·0	79	13·4	100	100
B. 891	89	10·7	98	23.4	73	6·6	97	22·9	89	15·9	112	119
B. 726	79	7·1	96	18·2	58	6·1	96	22·2	82	13·4	104	100
B. H. 10.12 ...			94	16·8	62	5·2	97	20·1	84	14·0	100	93
B. 4507					59	5·0	90	16·8	74	10·9	93	77
B. 11569 ...					69	8·0	97	24·0	83	16·0	104	113
B. 6308	96	12·7							96	12·7	148	153
B. 3922	87	11·4			75	9·9			81	10·6	125	143
G. 119	87	10·7	97	24·7					92	17·7	116	140
B. 374	87	10·3					99	24·9	93	17·6	115	116
G. 153			95	19·3					95	19·3	102	114
Co. 213			78	10·1							84	60

TABLE XVIB.

BORER INFESTATION. RATOONS.

Variety.	Millars.		Fitches Creek (1).		Fitches Creek (2).		Jolly Hill.		Means.		% Infestation on basis of P. O. J. 2878 =100.	
	S.	J.	S.	J.	S.	J.	S.	J.	S.	J.	S.	J.
P. O. J. 2878 ...	66	8·6	41	3·9	25	2 5	65	9·8	49	6·2	100	100
B. H. 10.12 ...	79	8·6	29	2·5			66	8·9	58	6·7	102	90
B. 4507	60	6·7	29	1·6	10	0·9			33	3·1	75	62
B. 11569 ...	63	8·0	41	3·6	43	4·4			49	5·3	111	106
P. O. J. 213 ...			18	1·5	12	0·8			15	1·15	46	36
G. 140			33	2·4	27	1·8			30	2·1	91	66
G. 119					53	5·2			53	5·2	212	208
B. 417	77	11·7							77	11·7	117	136
S. C. 12.4 ...	75	7·2							75	7·2	114	84
B. 381							83	14·7	83	14·7	128	150
B. 374							85	14·8	85	14·8	130	151
B. 891							77	14·6	77	14·6	118	149
B. 726							71	9·5	71	9·5	109	97

If the varieties are placed in order of increasing severity of borer infestation we find the following lists:—

Plant Cane Experiments.—Co.213 B.4507 B.H.10.12 P.O.J.2878 B.726 G.153 B.11569 B.374 B.891 G.119 B.3922 B.6308.

Ratoon Experiments. —P.O.J.213 B.4507 G.140 S.C.12.4 B.H.10.12 B.726 P.O.J.2878 B.11569 B.417 B.891 B.381 B.374 and G.119.

As will be seen from the tables the relative degree of infestation in the case of many of these varieties has been calculated from the means at one station only so that no high degree of accuracy can be claimed for some of the values. It is seen, however, that the borer infestation of B.4507* is less than that observed in any other standard variety, that B.H.10.12 is somewhat more severely attacked, P.O.J.2878 still more severely and that B.11569 is very severely attacked. Of the new Barbados varieties B.726 shows about the same degree of infestation as P.O.J.2878 and B.891 a higher degree of infestation even than B.11569.

It may be of interest to compare these values with values for certain of the varieties determined in Barbados in 1933. Tucker** has shown that there is evidence that extent of borer infestation is correlated with the percentage of dry matter in the central spike or leaf spindle. Table XVIC shows his figures for % dry matter and % borer infestation in certain of the varieties included in the Antigua experiments together with the relative borer infestation values (% bored joints) as shown in the foregoing tables.

*There appears to be some correlation between low borer infestation and presence of root disease which has been present in this variety.

** R. W. E. Tucker. "Varietal Factors in Cane which may influence extent of oviposition by D. Saccharalis and a Possible Method for Determining Varietal Susceptibility to Borer Attack."
Agricultural Journal of the Department of Science & Agriculture Barbados. Vol II. No. 4 1933.

TABLE XVIC.

Varieties.	B.H.10.12	P.O.J.2878	B.11569	B.726	B.417	B.891
% Dry matter in leaf spindle (Barbados 1933.) ..	19.12	18.63	18.4	17.65	17.59	17.03
%Borer infestation (Barbados 1933.) ..	12.15	Very High	10.88	11.26	High	18.68
Relative Borer infestation Antigua 1934 ..						
A Plant Cane ..	93	100	113	100		119
B. Ratoons ..	90	100	106	97	137	149

If it is assumed that the % dry matter determined in Barbados in 1934 holds good for the same varieties under Antiguan conditions, the correlation is even more marked in the case of the Antigua infestations except in the case of B.11569 which shows a much higher degree of infestation than might be expected.

CULTURAL EXPERIMENT.

The experiment conducted at Greencastle Experiment Station to compare the relative merits of flat and vertical planting and of spacing at 4½′ x 4′ and 4½′ x 2′ was reaped as first ratoons during 1934.

The mean yields were:—

Flat 2½′ x 2′ 24.9 tons per acre.
Vertical 2½′ x 2′ 23.3 „ „ „
Flat 4½′ x 4′ 23.8 „ „ „
Vertical 4½′ x 4′ 23.5 „ „ „
Mean of all "flat" plots 24.3 tons per acre.
„ „ „ "vertical" plots 23.5 „ „ „
„ „ „ 2′ plots 24.2 „ „ „
„ „ „ 4′plots 23.7 „ „ „
In no cases are the differences significant.

COTTON SEED SELECTION.

Fifty pounds of pedigree seed was imported from Montserrat and a seed plot established at Thibous Estate. Germination was poor and at the end of December it was obvious that only a small quantity of seed would be obtainable from this plot for planting in 1935 for the 1936 crop.

The bulk of the 1934-1935 crop was planted with seed from the 1933-1934 pedigree seed plot (established in 1933 with 50 lb. pedigree seed imported from Montserrat) and it is proposed that the bulk of the 1935-36 crop should be planted with seed from a field planted with this seed at Harts (Thibous) in the absence of an adequate supply of seed from the actual 1934-35 pedigree plot. The bulk of the 1935-36 seed supply will thus be one generation further removed from the Montserrat pedigree seed than was the case in 1934-35.

The improvement in purity and in general quality resulting from careful seed selection in 1930-31 and 1931-32 has been maintained during the season under review.

WORK IN CONNECTION WITH INSECT AND FUNGUS PESTS.

Moth Borer (Diatraea saccharalis.)

Counts conducted by the Antigua Sugar Factory during the 1934 crop indicated a considerable decrease in borer damage as compared with counts made

the previous year: this has been attributed in a great measure to the Tachnid fly (Lixophaga diatraeae) introduced during 1932.

Mr. H. E. Box who has been responsible for the investigation of the ecology and control of Diatraea moved to St. Lucia during the year but he will continue to visit Antigua from time to time to determine borer infestation and the degree of control effected by Lixophaga.

Cotton Caterpillar (Alabama argillaceae) was not prevalent during 1934.

Pink Boll Worm (Platyedra gossypiella) was plentiful during the early months of 1934 but a fair crop was reaped from the small acreage in 1933. By the end of 1934 it was abundant in the earlier planted fields.

AGRICULTURAL EXPORTS.

The following table shows the chief agricultural products exported during the years 1932, 1933 and 1934.*

Article.	1932.		1933.		1934.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		£		£		£
Sugar (Crystals) ...	18,448 tons	175,929	22,373 tons	194,703	19,505 tons	182,096
Molasses (V. Pan) ...	728,701 gals	11,755	820,232 gals	1,709	808,459 gals	2,515
Molasses (Muscovado) and Fancy Syrup...	29,000 gals	1,027			32,715 gals	1,968
Rum					851 gals	133
Cotton (Lint)	22,500 lb.	936	8,400 lb.	420	9,600 lb.	480
Lime Juice (Raw) ...	1,280 gals	75	9,189 gals	557	3,712 gals	142
Green Limes ...	173 brls	144	85 brls	22	97 brls	85
Lime Oil ...	112 gals	3,808	80 gals	874	40 gals	395
Tamarinds ...	520 brls	450	495 brls	427	152 brls	93
Tomatoes ...	815 crts	196	13 crts	3	...	...
Hides and Skins ...	...	61	...	85	...	75
Coconuts ...	...	...	33,400	135	400	2
Onions ...	1,805 crts	574	26 crts	8	10 crt	6
Horses ...	17	74	4	40	2	25
Cattle ...	17	40	...	...	...	...
Asses ...	64	95	1	3	6	7
Sheep ...	74	21	3	15	...	...
Mules	20	304	7	40	1	12

*Figures supplied by Treasury.

PROGRESS IN THE CHIEF INDUSTRIES.

Sugar. The mean rainfall for the island during 1933 amounted to 41.50 ins., which is 1.97 ins. below the average rainfall for the past sixty years. The distribution was reasonably good however and the 1934 grey crystal crop was 20,677 tons, of which 19,505 tons valued at £182,096 was exported.

Climatic conditions were unfavourable during the greater part of 1934 although good rains fell in August and again in November and December. At the end of 1934 it appeared that the 1935 crop though late would be in the region of 18,000 tons provided rains continued during January.

A questionnaire was again sent out by the agricultural department, with a view to obtaining definite information as to the acreages under different varieties, the yields per acre of these varieties, the manurial treatment of the fields, the effect of time of planting on yield etc. Unfortunately it was impossible to obtain information from some estates but it has been possbile to get returns from a somewhat larger acreage than was the case in 1933.

The following summary of certain of the information received may be of interest, although it is realised that the varietal yields must be correlated with soil types and rainfall before information of real value can be obtained. It is hoped that in time it may be possible to establish the correlation at any rate to a considerable extent.

PLANT CANES FOR 1935. ACREAGE UNDER DIFFERENT VARIETIES.

Variety	B.H. 10.12	B. 11569	P.O.J. 2878	B. 4507	S.C. 12.4	B. 6308	B. 726	B. 147	B. 4596	Mixed	Total
Acreage	933.5	459.25	222.25	211.00	47.75	39.00	20.25	17.00	10.00	179.75	2139.75
% of Reported Area	43.6	21.5	10.4	9.9	2.2	1.8	0.9	0.8	0.5	8.4	

1934 CROP. AVERAGE YIELDS OF VARIOUS VARIETIES

	PLANT CANES.		FIRST RATOONS.			SECOND RATOONS.		
Variety.	Acres.	Average Tons per acre.	Variety.	Acres.	Average Tons per acre.	Variety.	Acres.	Average Tons per acre.
P.O.J. 2878	93·25	29·50	B. 4507	690·75	17·81	P.O.J. 2878	21·50	19·31
B. 4596	27·75	30·06	P.O.J. 2878	79·50	16·23	B. 4507	256·75	12·24
B. 6308	28·50	27·11	B. 417	12·00	16·23	B.H. 10·12	262·50	11·76
B. 4507	395·00	25.31	B. 11569	220·50	15·55	B. 11569	176·50	11·67
B.H. 10.12	610·75	24·67	B. 3922	17·00	15·70	Mixed	47·00	11·36
B. 11569	147·75	24·40	B. 4596	72·50	15·53	B. 3922	10·00	11·31
Mixed	304·25	21·47	B.H. 10.12	681·25	14·71	S.C. 12·4	30·00	11·07
B. 147	30·50	20·69	B. 147	23·00	14·46	B. 6308	57·00	10·28
S.C. 12.4	46·00	19·81	S.C. 12.4	27·75	14·41	B. 4596	58·25	10·08
			Mixed	243·50	12·71	W. Trans.	19·00	7·80
			B. 6308	62·75	10·04			
			W. Trans.	20·00	9·95			
Total	1,683·75	24·40	Total	2,150·50	15·50	Total	938·50	11·73

1934 Crop. Effect of Time of Planting on Yield.

Time of Planting.	B.H. 10.12		B. 4507.		B. 11569		P.O.J. 2878.	
	Acres.	Average Tons.	Acres.	Average Tons.	Acres.	Average Tons.	Acres.	Average Tons.
Nov. 1st—Dec. 31st	364·25	25·6	268·00	25·9	14·0	23·6	4·0	30·0
Jan. 1st—Mar. 31st	198·75	23·8	108·00	24·3	65·5	26·6	53·75	30·8
April 1st onwards.	47·75	21·5	19·00	21·8	68·25	22·6	35·5	27·4

Cotton. The 1933-34 crop was reaped from about 65 acres. Little damage was caused by the cotton caterpillar and although the pink boll worm was prevalent towards the end of the reaping season a fair yield per acre was obtained. The crop amounted to 32 bales (9300 lb clean cotton and 300 lb stains) all of which was exported during 1934.

During the year 27 bales of the 1934 crop and 38 bales from stock in hand were sold at prices varying from 9¾d. per lb. to 1s. per lb. in the case of the stock in hand to 1/1½ per lb. in the case of the 1934 crop.

The acreage planted for the 1934-35 crop is estimated as about 200 acres. At the end of 1934 the earlier plantings which at first had given great promise suffered from the abnormally heavy rains of late November and early December. The greater portion of the later planted cotton promised a good yield per acre.

LAND SETTLEMENT.

Greencastle. At the end of December 100 plots out of a total of 101 available had been taken up, ninety eight of these being arable plots and the remaining two a shop site and a pasture lot respectively.

During the year six allottees were evicted for failure to comply with the regulation as to satisfactory cultivation and it is probable that a few others will have to be evicted during 1935.

As has been noted in earlier reports, inadequate drainage and failure to keep growing crops weeded together with late cultivation and planting are the chief faults. To encourage early cultivation an advance of £68.13s. 5d. was made to allottees during 1934 to cover the cost of gyrotilling 34 acres.

The Greencastle allottees supplied 1,869 tons 11 cwt of cane to Bendals factory for the 1934 crop. This was purchased at 12/- per ton, followed by a bonus of 1/11½ per ton, the gross value amounting to £1,304. 15s. 7½. After deduction of weighing charges, and sums due to the Government as loans, or instalments of the purchase price of lots, the balance £996. 16s. 9d. was paid to the allottees through the Agricultural Department.

The 1935 crop will be reaped from 172 acres and is estimated at about 1900 tons.

Free cane plants were again supplied to new allottees and in addition, allottees generally were supplied, free of charge, with limited numbers of cuttings of promising new varieties from the nurseries at the experiment station. Free fruit trees (Citrus and mangoes) were also supplied and 22 Julie and 30 other choice mangoes were propagated in situ in allotments.

During 1934 £16 9s. 1d. was spent on drainage and estate roads.

Eight tons of sulphate of ammonia was provided for the manuring of ratoon canes, £76, the value of the fertilizer supplied being regarded as a loan to be repaid on reaping the 1935 crop.

Matthews. At the end of December one hundred lots out of a total of 137 available were occupied. There were no evictions during the year.

The 1934 crop amounted to 876 tons; 850 tons were sold to the Antigua Sugar Factory at 13/11½ per ton followed by a bonus at the rate of 9.67d. per ton and the remaining 26 tons were sold to Bendals at 12/- per ton.

After deduction of packing, weighing and supervision charges, and of sums due to the Government for loans, instalments of the purchase price etc. the balance £462 1s. 4d. was paid to the allottees.

The 1935 crop will be reaped from 115 acres and is estimated at 900 tons.

During the year £3 16s. 11d. was spent on upkeep of drains and roads. Two tons eight cwt sulphate of ammonia was provided for the manuring of ratoon canes, the cost £22 16s. 0d. being regarded as a loan to be repaid on reaping the 1935 crop.

Jonas's. The survey of Jonas's was completed during 1935 and by the end of December forty-two lots had been taken up, the total number of allotments on this settlement being 68.

The 1935 cane crop will be reaped from 44½ acres and is estimated at 445 tons.

During the year £7 6s. 0d. was spent on providing free planting material for the 1936 crop.

The following Table shows the allocation of the crop revenues from the three Land Settlements during the period under review. The total gross receipts amounted to £2,185. 3s. 10½d. and the total reaping, packing, weighing and supervision charges amounted to £36. 4s. 6d. and the unpaid balances to 4/10 so that the allottees received £2,148. 14. 6½ either in cash, manure or in instalments of the purchase price of their plots.

SUMMARY SHOWING ALLOCATION OF CROP REVENUES FROM THE LAND SETTLEMENT SCHEMES, 1934.

Settlement.	Total Value Received.	Rents Deducted.	Agricultural Loans Deducted.	Weighing and Packing Charges.	Supervision.	Other Deductions including loans for purchase of standing canes.	Net Proceeds Paid.	Unpaid Balance.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Greencastle								
Bonus on 1933 crop	139 14 1	12 14 0	0 18 0				126 2 1	
1934 crop	1,121 14 4½	233 5 6	58 9 8	3 17 11		*5 12 0½	820 7 9	1 6
Bonus on 1934 crop	183 1 3	8 13 11		1 16 0			176 9 0**	2½
Total Greencastle	1,444 9 8½	254 13 5	59 7 8	5 13 11		5 12 0½	1122 18 10	1 8½
Matthews								
1934 crop	609 16 11	96 16 9½	46 9 0	17 13 11½	7 1 7½	13 10 0	428 4 3	1 3½
Bonus on 1934 crop	34 5 5	6 9					33 17 1	1 7
Total Matthews	644 2 4	97 3 6½	46 9 0	17 13 11½	7 1 7½	13 10 0	462 1 4	2 10½
Jonas's								
1934 crop	96 11 10	1 10 0		3 7 4	13 6	12 3	90 8 4	5

* £3. 17. 10½ deducted for Sugar Cane Investigation Committee (½d. per ton of cane).
£1. 14. 2 Cost of reaping an abandoned allotment.

** The £3. 17. 10½ deducted for Sugar Cane Investigation Committee during crop was repaid to the peasants when the bonus was received, i.e., Bonus paid by Bendals 1/11½ per ton; bonus paid peasants 2/- per ton.

ANTIGUA COTTON GROWERS' ASSOCIATION.

Peasants cotton was again purchased at the Antigua Cotton Factory, 10,635 lb clean lint and 30lb stained lint being purchased at 1½d and ½d per lb respectively.

Mr. E. Dew represented the Association at a meeting of the Executive Committee of the West Indian Sea Island Cotton Association held in Montserrat in April and Mr. E. Scott Johnston represented the Association at the annual meeting held in the same island during November.

The following were the members of the Board of Management for the year 1934-35; the Honourable R. A. L. Warneford, O.B.E., Chairman, the Honourable R. S. D. Goodwin, O.B.E., the Honourable Major J. T. Dew, M.B.E., Messrs. E. Dew, F. J. Goodwin, A. K. Petrie Hay and E. Maginley, and the Agricultural Superintendent ex officio Honorary Secretary.

LIVE STOCK.

The following section on Live Stock has kindly been prepared by Dr. Hutson, Government Veterinary Surgeon.

The standard of animals in the island for breeding purposes is very low. Owners do not attribute sufficient importance to the necessity of selecting animals for breeding with their desired respective qualifications. The prevailing desire appears to be to produce numbers quickly without regard to the quality of progeny produced with obviously disastrous results. This applies to all classes of livestock in the island.

The establishment of satisfactory breeding centres at the various estates where pasturing facilities are available is suggested as a means of rearing animals suitable for working purposes and thereby effecting a means of economical saving. Peasant owners should be induced and advised to make use of good herd sires rather than the use of a scrub sire.

The importation of a good boar would be very helpful in attempting to improve the standard of pigs.

With regard to dairy cattle, it is suggested that owners and breeders of this class of animal should become more closely associated with a view to promoting the improvement of the present stock. The introduction of one or two imported pure bred bulls and the formation of live exhibits would be valuable means of stimulating the desire amongst owners to produce and own better animals.

OFFICIAL VISITS.

Visits were paid to the Experiment Station by the following:—

His Excellency the Governor Lieut. Col. Sir Reginald St. Johnston, K.C.M.G., Sir Geoffrey Evans, C.I.E., M.A., Dip. Agric., Principal of the Imperial College of Tropical Agriculture, Mr. G. A. Jones, Dip. Agric., Commissioner of Agriculture, Mr. C. C. Skeete, B.A., Assistant Commissioner of Agriculture, Dr. J. G. Myers, Biological Control Officer, Dr. C. S. Harland, Cotton Adviser, Mr. P. E. Turner, M.Sc., F.I.C., Adviser in Sugar Cane Experiments to the Commissioner of Agriculture, Mr. H. E. Box, F.E.S., Entomologist, Advisory Department, Imperial College of Tropical Agriculture and Mr. R. W. E. Tucker, M.A. B.Ed., Entomologist Barbados Department of Agriculture.

CORRESPONDENCE.

During the year under review 215 Minute Papers were dealt with, 369 letters were received and 820 letters were despatched.

AGRICULTURAL EDUCATION.

Monthly lectures to teachers of Primary Schools were given by the Agricultural Superintendent.

The course of weekly lectures on agriculture for overseers was continued after the reaping of the 1934 crop. The Agricultural Superintendent lectured on general agriculture and Dr. Hutson, the Government Veterinary Surgeon, lectured on "The Animal."

Four candidates sat for the preliminary examination which was held in November.

SUMMARY OF LEGISLATION AFFECTING ANIMALS, PLANTS, CROPS ETC.

The summary published in the report for the period April to December, 1931, remains unaltered save for the following amendments.

ANIMALS.

S.R. & O. No. 20 of 1933 made under Sec. 18 of the Diseases of Animals Ordinance No. 16 of 1931 prohibits the landing of animals from Trinidad unless accompanied by a satisfactory veterinary certificate.

COTTON.

The Cotton Seed Control Ordinance No. 10 of 1932 prohibits the planting of any cotton seed other than that inspected and approved by the Agricultural Officer.

The Cotton Export Levy Ordinance No. 9 of 1933 provides for a levy on all cotton exported from the Presidency, the funds thus obtained being used for the purpose of furthering the interests of the cotton industry.

S.R. & O. No. 10 of 1934 made under Sec. 3 of the Cotton Export Levy Ordinance No. 9 of 1933 fixes the levy at the rate of 3/8d. per lb.

The Cotton Export Ordinance No. 20 of 1934 makes provision for the regulation of the quantity of cotton exported from the presidency.

PLANTS.

S.R. & O. No. 12 of 1934 made under Sec. 5 of the Plants Protection Ordinance No. 16 of 1933 fixes two schedules in connection with the importation of plants etc., articles in the first schedule being absolutely prohibited and those in the second schedule conditionally prohibited.

ACKNOWLEDGMENT.

Thanks are due to Hon. A. E. Collens, F.I.C., F.C.S. Government Chemist, for conducting the juice analyses in connection with the varietal sugar cane experiments reported in this report, and for numerous other analyses (manures and soils) in connection with other field experiments the results of which will appear in subsequent reports.

RETURN OF RAINFALL ON THE FOLLOWING PLACES IN ANTIGUA FROM 1ST. JANUARY TO 31ST. DECEMBER 1934.

Name.	No.	January.	February	March	April.	May	June.	July.	August.	September	October	November.	December.	Total.
Antigua Sugar Factory	1	1·56	0·65	2·38	0·72	1·35	4·66	3·54	10·05	6·39	2·31	13·59	7·39	54·59
Botanic Station ...	2	1·63	0·85	3·57	1·02	1·89	4·36	3·76	10·24	4·14	3·16	10·63	7·53	52·78
Bennett Bryson's Office	3	2·10	0·91	3·61	1·12	2·00	4·00	3·94	9·89	3·78	2·99	9·16	7·23	50·73
Claremont	4	1·85	1·15	4·32	0·48	0·70	3·22	2·74	10·09	4·65	1·41	12·06	7·48	50·15
Carlisle	5	0·60	...	2·30	1·10	2·70	3·72	5·31	6·62	6.19	3·20	10·87	7·33	49·94
Creekside	6	3·30	0·56	7·35	0·86	0·67	3·24	2·40	7·44	0·99	0·97	13·06	8·70	49·54
Sandersons ...	7	1·92	0·53	1·96	0·67	1·71	2·74	3·39	8·29	6·00	1·85	12.44	7·92	49·42
Blakes	8	2·81	0·53	2·01	0·76	2·00	3·87	2·77	9·71	5·08	1·81	11·04	6·55	48·94
Vernons	9	2·22	1·25	1·95	1·10	1·29	4·57	2·04	8·64	4·72	1·40	12·93	6·12	48·23
Weirs	10	1·25	1·35	0·56	0·40	0·77	7·50	2·03	7·84	5·31	1·75	13·08	5·64	47·48
Parham Hill ...	11	1·87	1·09	1·18	0·80	0·90	4·39	2·04	8·37	4·29	1·25	14·95	5·95	47·08
Paynters	12	1·55	0·43	2·12	0·58	1·18	4·14	3·06	8·50	4·97	1·53	12·48	5·87	46·41
Parham Lodge ...	13	1·43	1·33	2.47	0·98	1.33	4·22	2·22	8·34	3·47	1·05	13·75	5·82	46·41
Fitches Creek ...	14	1·42	0·66	2·16	0·65	1·78	4·19	2·90	7·80	5·48	1·57	11·41	5·53	45·55
Body Ponds ...	15	2·08	0·67	2·27	0·28	1·29	4·17	3·96	7·63	3·27	1·95	10·60	7.30	45·47
Bendals Factory ...	16	1·89	0·58	3·72	0·80	1.94	2·78	3·30	6·86	3·44	2·25	11·42	6·36	45·34
Delaps	17	2·21	0·43	1·91	0·26	1·50	4·55	3·19	8·46	4·60	1·66	8·98	7·49	45·24
Donovans	18	1·28	1·09	2.23	0·53	1·05	4·18	2·21	7·43	4·99	1·56	13·17	5·31	45·03
Parham New Work	19	1·30	0·45	1·82	0·25	1·24	4·13	2·08	8·01	4·01	1·51	13·39	6·74	44·93
Belmont	20	1·37	1·15	2·53	0·25	0·96	3·30	2·51	8·51	3·82	2·02	11·40	6·96	44·78
North Sound ...	21	1·23	0·47	1·77	1·25	0·91	3·80	2·76	8·31	5·24	1·72	11·93	5·36	44·75
Five Islands ...	22	1·56	0·58	1·63	1·34	1·34	2·65	3·32	7·90	2·76	2·85	12·74	6·03	44·70
Blackmans ...	23	1·30	0·93	2·39	0·55	1·42	3·29	2·22	7·01	5·57	1·50	12·16	6·32	44·66
Diamond	24	1·72	0·41	1·38	0·54	1·30	3·73	2·95	8·30	4·20	1·24	11·41	6·44	43·62
Crosbies	25	2·11	0·59	2·28	0·64	1·06	2·91	4·24	7·46	3·10	1·32	9·59	8·10	43·40
Yeptons	26	1·45	0·59	2·49	0·78	1·14	3·16	2·77	8·88	2·69	2·02	10·38	6·88	43·23
Ottos	27	1·47	1·02	2·73	0·41	0·75	2·61	4·29	9·90	2·37	1·70	10·29	5·53	43·07
Comfort Hall ...	28	1·18	0·70	1·61	0·55	0·56	4·91	2·12	7·78	4·06	1·36	11·6	5·61	42·05
New Division ...	29	1·69	0·68	3·39	0·78	0·86	2·40	2·93	7·81	2·74	1·30	10·04	7·42	42·04
Pattersons ...	30	1·52	0·68	2·40	0·27	0·58	4·18	2·45	6·30	5 98	2·00	10·13	5·52	42·01
Cedar Valley ...	31	0·54	0·50	2·52	0·78	1·74	3·58	3·87	6·85	3·70	1·68	8·73	6·12	40·61
Collins	32	1·41	0·57	1·61	0·42	0·98	3·82	2·68	6·15	4·23	1·30	9·62	7·29	40·08

RETURN OF RAINFALL ON THE FOLLOWING PLACES IN ANTIGUA FROM 1ST. JANUARY TO 31ST. DECEMBER, 1934.

Names	No.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
The Garden ...	33	1·13	0·19	0·86	0·44	1·13	2·95	2·08	7·97	4·24	0·93	11·93	6·07	39·92
Pares & Cochranes	34	1·30	0·10	1·59	0·50	0·95	3·43	2·19	7·20	3·87	1·62	11·38	5·64	39·77
Wallings Dam ...	35	2·37	0·87	1·96	—	0.45	1·20	3·46	6·76	3·64	0·67	11·26	7·00	39·64
Betty's Hope ...	36	1·58	0·20	1·34	0·35	1·10	4·24	2·19	7·34	3·25	1·60	10·14	6·25	39·58
Duers	37	1·26	0·40	1·21	0·34	0·69	2·89	2·86	7·52	4·44	1·26	11·18	5·53	39·58
Morris Looby's ...	38	2·57	0·60	1·28	0·40	0·70	3·61	2·32	7·61	2·70	2·07	9·61	6·10	39·57
Wallings Hill ...	39	2·29	0·86	1·97	—	0·44	1·21	3·31	6·84	3·52	0·64	11·31	6·92	39·31
Cochranes and Thomases ...	40	1·63	0·52	1·26	0·53	0·61	3·23	2·19	7·41	4·40	2·16	10·03	5·05	39·02
Burkes	41	1·65	0·58	1·25	0·16	1·15	2·84	2·41	7·33	4·80	1·03	9·58	6·18	38·96
Judges	42	1·91	0·86	2·12	1·03	0·84	3·64	3·78	5·53	2·86	2·32	8·86	5·19	38·94
Cassada Garden ...	43	1·24	0·60	2·06	0·37	2·18	3·73	2·69	7·18	3·68	2·25	8·46	4·37	38·81
Millars	44	1·20	0·60	0·90	1·71	1·27	4·32	3·25	5·02	6·25	3·60	6·20	3·60	37·92
Willis Freemans ...	45	1·88	0·35	1·16	0·13	0·85	2·67	2·41	6·64	6·48	1·35	9·00	4·85	37·77
Cooks	46	0·60	0·81	2·50	0·45	0·30	2·32	1·56	7·47	2·56	1·09	14·60	3·50	37·76
Lyons	47	1·80	0·37	1·57	0·22	0·79	4·59	2·84	7·55	3·62	0·47	9·05	4·81	37·68
Yorkes	48	1·62	0·72	2·80	0·50	1·30	1·95	2·73	5·70	2·73	1·79	10·58	5·21	37·63
Cedar Hill ...	49	0·35	1·08	1·75	0·21	1·18	3·33	1·85	6·79	4·36	0·99	11·35	4·30	37·54
Gilberts	50	1·19	0·62	1·57	0·62	1·19	3·94	2·06	6·67	2·45	1·54	9·82	5·49	37·16
The Cotton ...	51	1·08	0·43	1·60	1·02	1·19	3·59	1·28	6·41	2·07	1·14	12·79	4·45	37·05
Long Lane ...	52	1·17	0·40	0·96	0·18	0·90	3·20	2·82	7·21	3·30	1·18	9·56	5·74	36·62
Weatherills ...	53	1·93	0·39	2·06	0·89	1·20	2·35	4·05	5·32	1·93	1·19	9·55	4·89	35.75
Marble Hill ...	54	1·47	0·44	1·91	0·82	1·35	3·00	4·10	5·94	2·70	1·15	7·53	4·70	35·11
Langfords	55	1·58	0·35	1·54	0·99	0·93	2·61	3·50	5·83	2·56	1·45	7·85	5·53	34.72
Thibous	56	1·96	0·47	1·97	0·49	0·70	2·48	3·09	4·49	3·53	1·98	7·94	4·65	33.75
Gaynors ...	57	1·00	0·23	1·29	0·42	0·67	3·70	2·35	6·80	3·35	0·78	8·51	4·57	33·67
High Point ...	58	1·29	0·55	1·76	0·64	0·77	3·00	2·22	5·01	2·60	2·04	8·80	4·45	33·13
Mercers Creek ...	59	0·78	0·68	1·91	0·66	0·92	3·71	1·58	5·47	1·77	0·98	9·45	4.10	32·01
Montpelier ...	60	1·18	0·46	0·44	0·34	—	3·83	1·54	6·60	3·91	0·95	9·25	2·41	30·91
Codrington Village, Barbuda ...		2·37	1·11	0·54	0·53	0·10	2·52	3·00	4·00	4·25	1·28	8·99	6·46	35.15

AVERAGE RAINFALL 1874—1933.

								ins.
In	1874	the	average	rainfall	on	41	stations	was 31.16
	1875	,,	,,	,,	,,	40	,,	,, 28.78
	1876	,,	,,	,,	,,	36	,,	,, 41.98
	1877	,,	,,	,,	,,	38	,,	,, 49.05
	1878	,,	,,	,,	,,	53	,,	,, 47.11
	1879	,,	,,	,,	,,	52	,,	,, 61.54
	1880	,,	,,	,,	,,	46	,,	,, 49.68
	1881	,,	,,	,,	,,	44	,,	,, 53.75
	1882	,,	,,	,,	,,	45	,,	,, 33.04
	1883	,,	,,	,,	,,	56	,,	,, 55.51
	1884	,,	,,	,,	,,	56	,,	,, 43.98
	1885	,,	,,	,,	,,	53	,,	,, 43.39
	1886	,,	,,	,,	,,	55	,,	,, 47.78
	1887	,,	,,	,,	,,	50	,,	,, 43.68
	1888	,,	,,	,,	,,	47	,,	,, 44.23
	1889	,,	,,	,,	,,	50	,,	,, 73.59
	1890	,,	,,	,,	,,	45	,,	,, 33.00
	1891	,,	,,	,,	,,	45	,,	,, 50.01
	1892	,,	,,	,,	,,	53	,,	,, 38.43
	1893	,,	,,	,,	,,	54	,,	,, 38.69
	1894	,,	,,	,,	,,	68	,,	,, 38.85
	1895	,,	,,	,,	,,	69	,,	,, 52.91
	1896	,,	,,	,,	,,	56	,,	,, 59.85
	1897	,,	,,	,,	,,	54	,,	,, 39.67
	1898	,,	,,	,,	,,	66	,,	,, 48.85
	1899	,,	,,	,,	,,	63	,,	,, 47.50
	1900	,,	,,	,,	,,	64	,,	,, 36.95
	1901	,,	,,	,,	,,	65	,,	,, 57.61
	1902	,,	,,	,,	,,	71	,,	,, 58.80
	1903	,,	,,	,,	,,	68	,,	,, 43.68
	1904	,,	,,	,,	,,	70	,,	,, 37.01
	1905	,,	,,	,,	,,	68	,,	,, 31.40
	1906	,,	,,	,,	,,	66	,,	,, 53.93
	1907	,,	,,	,,	,,	70	,,	,, 43.45
	1908	,,	,,	,,	,,	72	,,	,, 43.79
	1909	,,	,,	,,	,,	70	,,	,, 45.15
	1910	,,	,,	,,	,,	70	,,	,, 34.77
	1911	,,	,,	,,	,,	72	,,	,, 36.47
	1912	,,	,,	,,	,,	72	,,	,, 32.20
	1913	,,	,,	,,	,,	73	,,	,, 42.76
	1914	,,	,,	,,	,,	72	,,	,, 36.86
	1915	,,	,,	,,	,,	75	,,	,, 56.14
	1916	,,	,,	,,	,,	74	,,	,, 58.23
	1917	,,	,,	,,	,,	70	,,	,, 36.62
	1918	,,	,,	,,	,,	70	,,	,, 37.87
	1919	,,	,,	,,	,,	70	,,	,, 49.56
	1920	,,	,,	,,	,,	70	,,	,, 30.09
	1921	,,	,,	,,	,,	74	,,	,, 30.32
	1922	,,	,,	,,	,,	70	,,	,, 35.14
	1923	,,	,,	,,	,,	68	,,	,, 32.41
	1924	,,	,,	,,	,,	67	,,	,, 41.57
	1925	,,	,,	,,	,,	68	,,	,, 30.75
	1926	,,	,,	,,	,,	70	,,	,, 50.20
	1927	,,	,,	,,	,,	67	,,	,, 45.84
	1928	,,	,,	,,	,,	63	,,	,, 33.24
	1929	,,	,,	,,	,,	66	,,	,, 40.78
	1930	,,	,,	,,	,,	59	,,	,, 25.51
	1931	,,	,,	,,	,,	63	,,	,, 48.62
	1932	,,	,,	,,	,,	63	,,	,, 58.47
	1933	,,	,,	,,	,,	59	,,	,, 41.50
	1934	,,	,,	,,	,,	60	,,	,, 41.86

AVERAGE MONTHLY RAINFALL, 1934.

	inches.
January	1.56
February	0.64
March	2.05
April	0.61
May	1.11
June	3.51
July	2.81
August	7.42
September	3.90
October	1.62
November	10.74
December	5.89
	41.86

The average rainfall for 61 years is 43.44 inches, so that the rainfall for the year 1934 is 1.58 inches below the average.

METEOROLOGICAL SUMMARY, 1934.

Kept at the Botanic Station, Antigua.

Month	Thermometer								Barometer Reading		Rainfall Botanic Station	Barometer Corrected		Thermometer	
	Dry		Wet		Relative Humidity %		Maximum	Minimum	9 A M	3 P M		Highest	Lowest	Highest Max.	Lowest Min.
	9 A M	3 P M	9 A M	3 P M	9 A M	3 P M									
January ...	77·3	78·7	72·0	72.6	76·7	73·5	82·0	70·2	30·081	29·993	1·63	30·140	29·910	85	68
February ...	77·8	80·1	71·6	72.5	73 4	68.1	83·0	69·4	30·108	30·041	0·85	30·191	29·941	87	62
March ...	78·1	79·8	72·0	73·2	73·8	71·7	83·4	69·6	30·076	30·006	3·57	30·149	29·921	86	67
April ...	80·2	81·9	73·9	75.1	73·9	72·0	84·6	71·8	30·081	30·008	1·02	30·127	29·937	89	69
May ...	81·3	82·8	75·0	75.8	73·5	71·6	85·9	73·5	30·062	30·012	1·89	30·133	29·887	90	69
June ...	82·1	83·4	76·0	76.2	75·0	70·8	86.3	74·1	30·063	30·023	4·36	30·136	29·967	89	70
July ...	82·4	84·2	76·2	76·7	74·6	70·2	86.7	75·6	30·069	30·026	5·76	30·129	29·959	89	71
August ...	82·5	84·0	77·5	78·3	79·3	76·9	86·8	75.4	30·058	30·003	10·24	30·109	29·934	89	70
September ...	82·0	83·8	78·0	79.1	83·2	80·7	86·4	74·9	30·010	29·947	4·14	30·064	29·832	89	73
October ...	83·5	85·0	78·0	78.5	77·5	73·9	87.9	75·1	30·006	29 921	3·16	30·096	29·833	92	72
November ...	79·6	81·4	76·5	77.3	86.7	83·0	84.9	72·8	29·965	29 871	10·63	30·060	29·763	90	71
December ...	78·3	78·8	74·0	74·1	81·4	79·4	82·3	72.2	30·074	29·996	7·53	30·121	29 942	86	70
											52.78				
Means for the Year ..	80·4	82·0	75·1	75·8	77.4	74·3	85·0	72·9	30·054	29·987					

Highest Maximum Temperature=92° on 24th October.
Lowest Minimum Temperature=62° on 19th February.
Highest Barometer (corr.)=30.191 on 27th February.
Lowest Barometer (corr.)=29.763 on 27th and 28th November
Greatest Rainfall in 24 hours=3.61 ins. on 23rd August.

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